

10/587,467

=> d his

(FILE 'HOME' ENTERED AT 15:47:07 ON 01 OCT 2009)

FILE 'REGISTRY' ENTERED AT 15:47:20 ON 01 OCT 2009

L1 STRUCTURE UPLOADED  
L2 10 S L1  
L3 1189 S L1 SSS FUL  
L4 860 S L3 AND CAPLUS/LC  
L5 329 S L3 NOT L4

FILE 'CAPLUS' ENTERED AT 15:50:10 ON 01 OCT 2009

L6 281 S L3

FILE 'REGISTRY' ENTERED AT 15:51:19 ON 01 OCT 2009

L7 STRUCTURE UPLOADED  
L8 24 S L7 SUB=L3 SAM  
L9 551 S L7 SUB=L3 FUL  
L10 291 S L9 AND CAPLUS/LC  
L11 260 S L9 NOT L10

FILE 'CAPLUS' ENTERED AT 16:01:32 ON 01 OCT 2009

L12 138 S L9  
L13 ANALYZE L12 1- RN HIT : 291 TERMS

FILE 'REGISTRY' ENTERED AT 16:03:28 ON 01 OCT 2009

L14 100 S 287384?/RN  
L15 100 S 237762?/RN  
L16 100 S 851942?/RN  
L17 100 S 438002?/RN  
L18 100 S 534570?/RN  
L19 100 S 503538?/RN  
L20 1 S L9 AND L14  
L21 5 S L9 AND L15  
L22 6 S L9 AND L16  
L23 2 S L9 AND L17  
L24 4 S L9 AND L18  
L25 4 S L9 AND L19  
L26 3 S L21 AND SPIRO  
L27 537 S L9 NOT (L20 OR L23 OR L24 OR L25 OR L26)

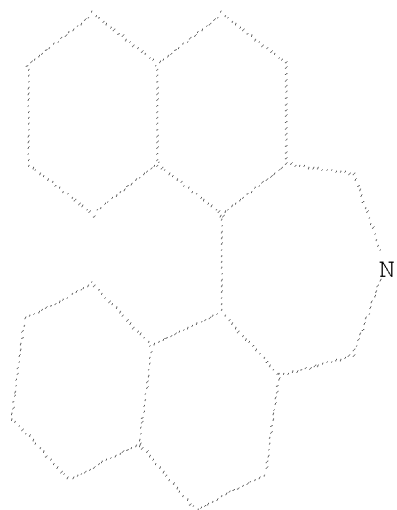
FILE 'CAPLUS' ENTERED AT 16:07:08 ON 01 OCT 2009

L28 107 S L27  
L29 77 S L28 NOT (2009/SO OR 2008/SO OR 2007/SO OR 2006/SO)

=> d l1

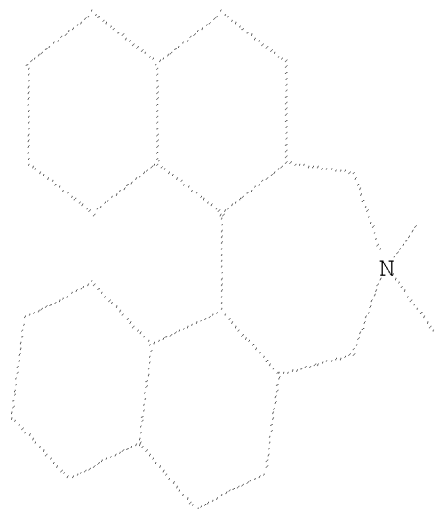
L1 HAS NO ANSWERS  
L1 STR

10/587,467



Structure attributes must be viewed using STN Express query preparation.

```
=> d 17
L7 HAS NO ANSWERS
L7          STR
```



Structure attributes must be viewed using STN Express query preparation.

```
=> d ibib abs hitstr total
```

L29 ANSWER 1 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2009:487389 CAPLUS

DOCUMENT NUMBER: 150:447706

TITLE: Process for stereoselective production of optically active pyrrolyl-succinic acid imide derivative

INVENTOR(S): Seki, Masahiko; Kawase, Yasushi

PATENT ASSIGNEE(S): Mitsubishi Tanabe Pharma Corporation, Japan

SOURCE: PCT Int. Appl., 39pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2009051216	A1	20090423	WO 2008-JP68834	20081017
W:	AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW			
RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			

PRIORITY APPLN. INFO.: JP 2007-270024 A 20071017

OTHER SOURCE(S): CASREACT 150:447706; MARPAT 150:447706

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB There is disclosed a process for producing a pyrrolyl-succinic acid imide derivative represented by the formula (I; R1 = C1-18 alkyl, aralkyl) or an optically active form thereof, which comprises the step of hydrolyzing a pyrrolyl-succinic acid derivative represented by the formula (II; R1, R2 = C1-18 alkyl, aralkyl) or an optically active form thereof. Optically active II is prepared by stereoselective alkylation of  $\alpha$ -(Pyrrol-1-yl)cyanoacetic acid tert-Bu ester (III; R1 = same as above) with X1CH2CO2R2 (X1 = leaving group; R2 = same as above) in the presence of a Maruoka catalyst [IV or V; Ra, Ra' = 3,5-bis(trifluoromethyl)phenyl, 3,5-bis[3,5-bis(trifluoromethyl)phenyl]phenyl; X- = counter anion] and a base. These processes produce an optically active pyrrolyl-succinic acid imide derivative stereoselectively and in a high yield. The optically active I is useful as a chiral building block and as an intermediate for the synthesis of a pharmaceutical compound or the like, particularly as an intermediate for the synthesis of ranirestat (a potential therapeutic agent for a diabetic complication) or an analog thereof. Thus, 2 g  $\alpha$ -(Pyrrol-1-yl)cyanoacetic acid tert-Bu ester III (R1 = tert-butyl), 26 mg Maruoka catalyst V [Ra, Ra' =

3,5-bis[3,5-bis(trifluoromethyl)phenyl]phenyl; X- = Br-], and 12.5 mL 50% Cs<sub>2</sub>CO<sub>3</sub> solution were added to 12.5 mL iso-Pr ether. The resulting mixture was cooled to -20°, treated dropwise with 1.9 g Et bromoacetate, and stirred overnight to give, after workup, 3 g optically active 2-Cyano-2-(pyrrol-1-yl)succinic acid 1-tert-Bu 4-Et ester (VI) (52.2 %ee). A solution of 3 g VI in 15 mL acetone was added dropwise to a mixture of 13 mL H<sub>2</sub>O, 2.9 g Na<sub>2</sub>CO<sub>3</sub>, 0.5 mL DMSO, and 30% aqueous H<sub>2</sub>O<sub>2</sub> solution and stirred at

room

temperature overnight to give, after workup and two recrystns. from EtOAc/hexane, 4.8% optically active 3-tert-Butoxycarbonyl-3-(pyrrol-1-yl)succinimide I (R<sub>1</sub> = tert-butyl).

IT

515137-98-1

RL: CAT (Catalyst use); USES (Uses)

(stereoselective production of optically active pyrrolyl(alkoxycarbonyl)succinimide derivative by stereoselective alkylation of pyrrolylcyanoacetate with bromoacetate using Maruoka catalyst and hydrolysis of cyano(pyrrolyl)succinate)

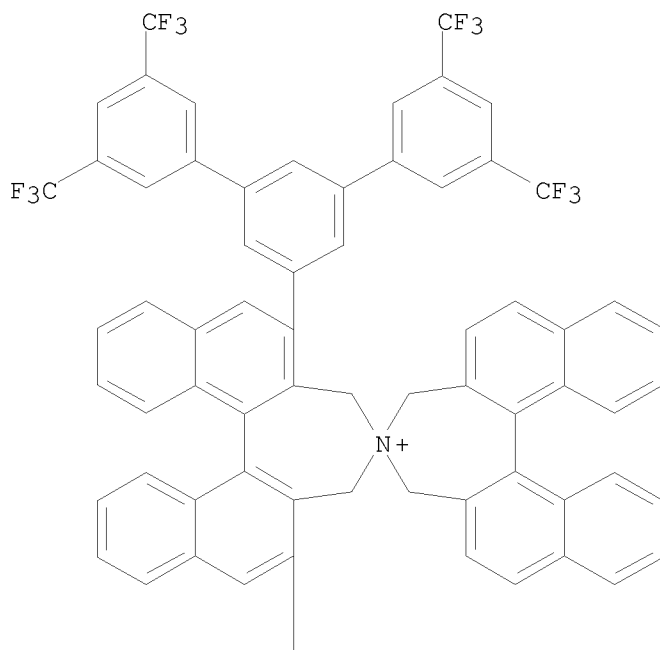
RN

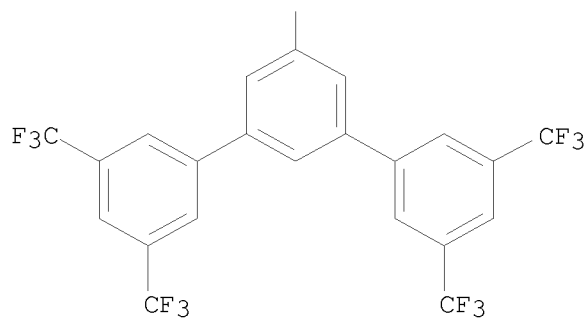
515137-98-1 CAPLUS

CN

4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium], 3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide, (11bR,11'bR)- (9CI) (CA INDEX NAME)

PAGE 1-A





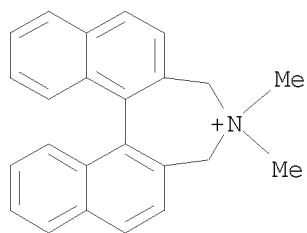
REFERENCE COUNT:

24

THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

10/587,467

L29 ANSWER 2 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2008:994152 CAPLUS  
DOCUMENT NUMBER: 149:306572  
TITLE: Sodium Sulfide  
AUTHOR(S): Dittmer, Donald C.  
CORPORATE SOURCE: USA  
SOURCE: e-EROS Encyclopedia of Reagents for Organic Synthesis  
(2001), No pp. given. John Wiley & Sons, Ltd.:  
Chichester, UK.  
CODEN: 69KUHI  
URL: <http://www3.interscience.wiley.com/cgi-bin/mrwhome/104554785/HOME>  
DOCUMENT TYPE: Conference; General Review; (online computer file)  
LANGUAGE: English  
OTHER SOURCE(S): CASREACT 149:306572  
AB A review of the article Sodium Sulfide.  
IT 97781-19-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Sodium Sulfide)  
RN 97781-19-6 CAPLUS  
CN 7H-Dinaphth[2,1-c:1',2'-e]azepinium, 8,9-dihydro-8,8-dimethyl-, bromide  
(1:1) (CA INDEX NAME)



L29 ANSWER 3 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2008:939586 CAPLUS

DOCUMENT NUMBER: 149:223907

TITLE: Quarternary ammonium salts containing chiral axis for the preparation of optically active  $\alpha$ -amino acid derivatives

INVENTOR(S): Maruoka, Keiji

PATENT ASSIGNEE(S): Nagase &amp; Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 123pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
JP 2008179566	A	20080807	JP 2007-14496	20070125
PRIORITY APPLN. INFO.:			JP 2007-14496	20070125
OTHER SOURCE(S):	MARPAT	149:223907		

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Title compds. I [R4, R5 = cyano, nitro, carbamoyl, etc.; X- = halogen anion, SCN-, HSO4-, etc.] were prepared Thus, bromination of (S)-3-(3,4,5-trifluorophenyl)-2,2'-dimethyl-1,1'-binaphthyl, e.g., prepared from (S)-2,2'-bis(methoxymethoxy)-1,1'-binaphthyl in 8 steps, followed by reaction with NH3 afforded compound II. Compds. I were tested as phase transfer catalysts for stereoselective  $\alpha$ -alkylation and aldol reaction of glycine. For example, to a mixture of 50% aqueous KOH (0.7 mL), N-(biphenylmethylene)glycine tert-Bu ester (88.5 mg) and compound II (2.74 mg) in toluene (2.1 mL) was added benzyl bromide (1.2 equiv) at 0°, the reaction was stirred for 2.5 h to give compound III in 95% ee and 95% yield.

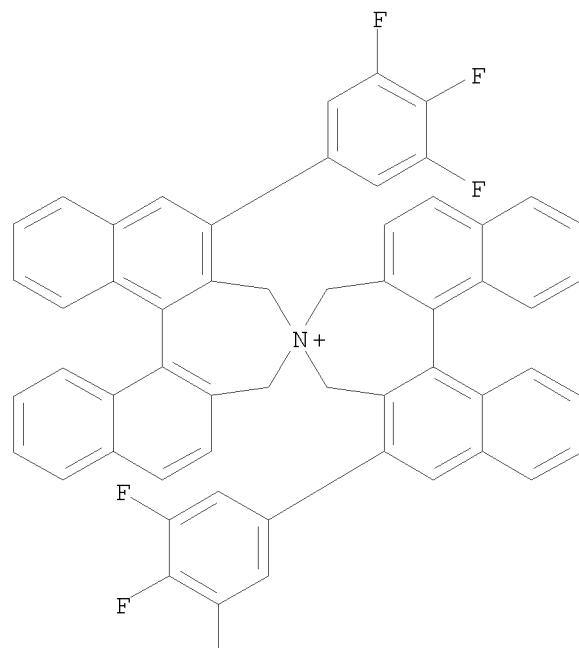
IT 1002330-65-5P 1002330-67-7P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of quaternary ammonium salts containing chiral axis for stereoselective alkylation and aldol reaction of  $\alpha$ -amino-acid derivs.)

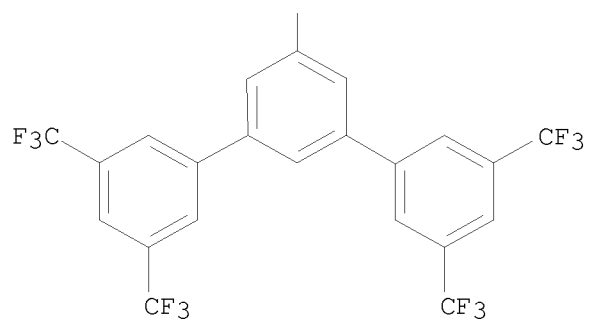
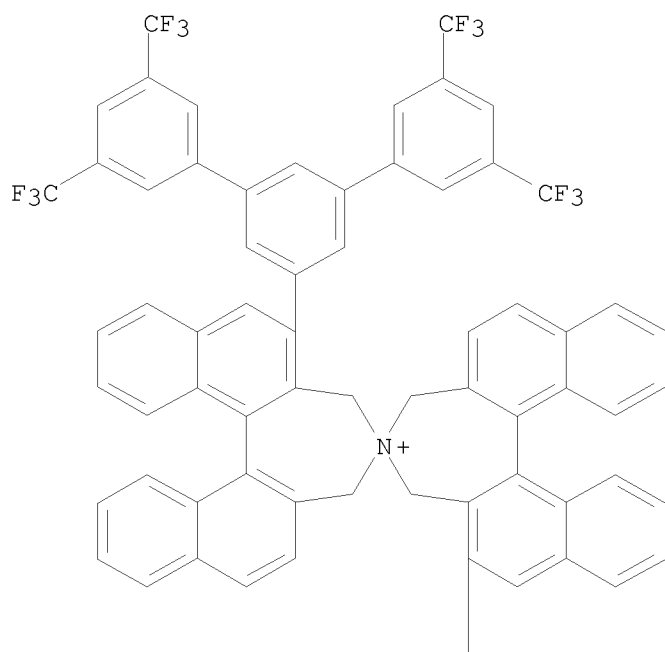
RN 1002330-65-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,2'-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS,11'bS)- (CA INDEX NAME)



RN 1002330-67-7 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,2'-bis[3,3'',5,5''-  
 tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide (1:1),  
 (11bS,11'bS)- (CA INDEX NAME)





L29 ANSWER 4 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2008:468761 CAPLUS

DOCUMENT NUMBER: 148:472384

TITLE: Preparation of (optically-active)  $\alpha$ -substituted amino acid Schiff bases

INVENTOR(S): Kubota, Yasushi; Inoue, Tsutomu

PATENT ASSIGNEE(S): Nippon Soda Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 31pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

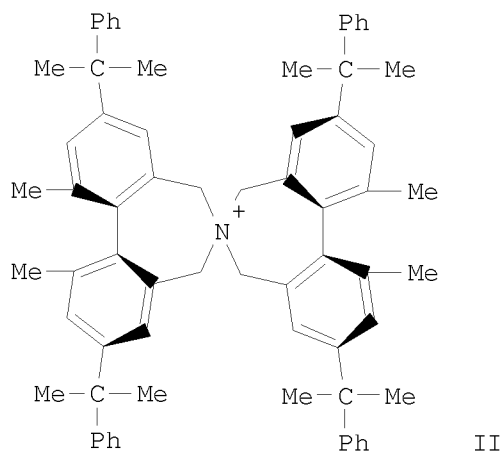
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008088115	A	20080417	JP 2006-271897	20061003
PRIORITY APPLN. INFO.:			JP 2006-271897	20061003
OTHER SOURCE(S):		MARPAT 148:472384		

GI



AB ArCR3:NCR1R4CO2R2 [I; R1 = (un)substituted C1-8 alkyl; (un)substituted C3-8 cycloalkyl, (un)substituted aryl, (un)substituted heteroaralkyl, etc.; R2 = H, OH, (un)substituted C1-8 alkoxy, Nrlr2; r1, r2 = U, (un)substituted C1-8 alkyl, (un)substituted C3-8 cycloalkenyl, (un)substituted aralkyl, etc.; r1 and r2 are bonded together to form N-heterocyclyl; R3 = H, (un)substituted C1-8 alkyl, (un)substituted C1-8 alkoxy; R4 = (un)substituted C1-8 alkyl, (un)substituted C4-8 cycloalkenyl, (un)substituted C7-20 aralkyl; Ar = (un)substituted aryl], useful as intermediates for drugs, agrochems., etc., are prepared by reacting ArCR3:NCHR1CO2R2 (R1-R3, Ar = same as above) with R4L (R4 = same as above; L = leaving group) in the presence of (a) alkali metal hydroxides, alkali metal carbonates, alkaline earth hydroxides, or alkaline earth carbonates and (b) crown ethers. Optically-active I (R4  $\neq$  R1) similarly prepared using (a), (b), and (c) optically-active quaternary ammonium salts. Thus, aqueous KOH solution was added dropwise to a mixture of

(E)-4-CF<sub>3</sub>C<sub>6</sub>H<sub>4</sub>CH:NCHMeCO<sub>2</sub>Et, optically-active quaternary ammonium salt II, 18-crown-6, BuI, and toluene at 20° and the reaction mixture was further stirred at 20° for 3 h to give 88%

(E)-4-CF<sub>3</sub>C<sub>6</sub>H<sub>4</sub>CH:NCMeBuCO<sub>2</sub>Et (87% e.e.).

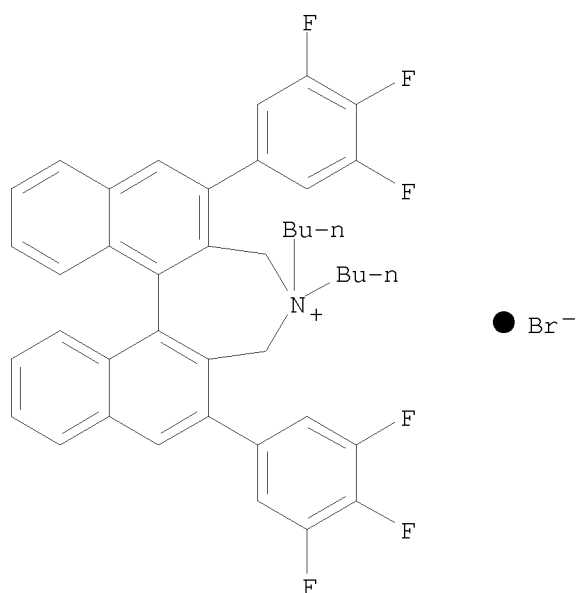
IT 851942-89-7

RL: CAT (Catalyst use); USES (Uses)

(preparation of  $\alpha$ -substituted amino acid Schiff bases hydrocarbylation of unsubstituted one using alkali metal/alkaline earth hydroxides/carbonates, crown ethers (and optically-active quaternary ammonium salts))

RN 851942-89-7 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)



L29 ANSWER 5 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2008:63886 CAPLUS

DOCUMENT NUMBER: 148:168969

TITLE: Preparation of chiral halogenated phenylalanines from tertiary-butyl 2-diphenyliminoacetate using chiral spiro quaternary ammonium salt phase transfer catalysts

INVENTOR(S): Kagawa, Takumi

PATENT ASSIGNEE(S): Tosoh Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2008007461	A	20080117	JP 2006-179753	20060629
PRIORITY APPLN. INFO.:			JP 2006-179753	20060629

OTHER SOURCE(S): MARPAT 148:168969

AB (R)-RC6H4CH2CH(NH2)CO2H [(R)-I; R = halo, C1-4 haloalkyl] are prepared by asym. benzylation of Ph2C:NCH2CO2CMe2 (II) with RC6H4CH2Br (R = same as above) in the presence of bis[[ (S)-1,1'-bi[4,6-bis(octyldimethylsilyl)naphthyl]]-2,2'-dimethyl]ammonium bromide [(S)-III] and alkalis, and hydrolysis of the resulting (R)-Ph2C:NCH(CH2C6H4R)CO2CMe2 (R = same as above) with acids. Similarly, (S)-I are prepared by the above process using (R)-III. Thus, II was treated with 2-FC6H4CH2Br in the presence of (S)-III and KOH to give >99% (R)-Ph2C:NCHYCO2CMe2 (Y = 2-FC6H4CH2) with 98.5 %ee, which was hydrolyzed with HCl to give 85% (R)-o-FC6H4CH2CH(NH2)CO2H.

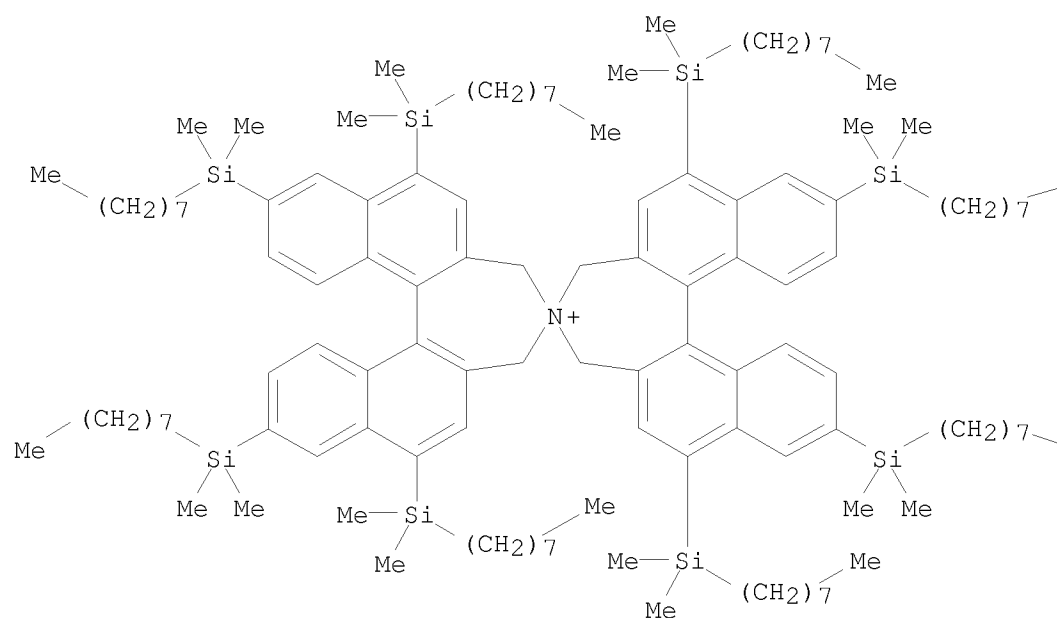
IT 832745-40-1 1001921-20-5

RL: CAT (Catalyst use); USES (Uses)

(preparation of chiral halogenated phenylalanines by benzylation of tert-Bu diphenyliminoacetate with chiral spiro phase transfer catalysts and alkalis, and hydrolysis with acids)

RN 832745-40-1 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
1,1',7,7',9,9',14,14'-octakis(dimethyloctylsilyl)-3,3',5,5'-tetrahydro-,  
bromide (1:1), (11bR,11'bR)- (CA INDEX NAME)



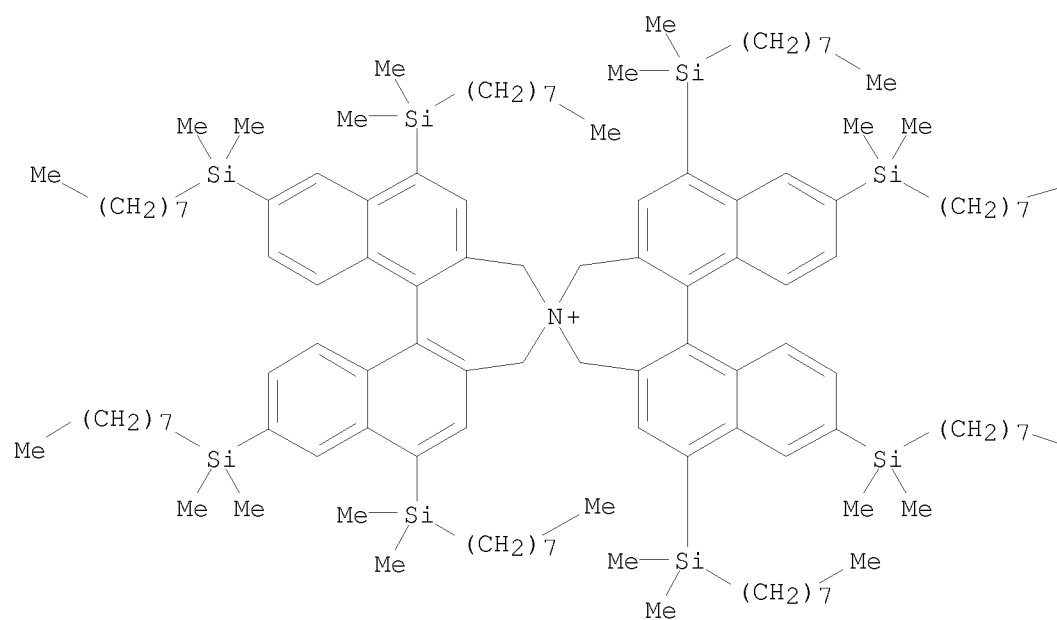
Me

● Br<sup>-</sup>

Me

RN 1001921-20-5 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 1,1',7,7',9,9',14,14'-octakis(dimethyloctylsilyl)-3,3',5,5'-tetrahydro-,  
 bromide (1:1), (11bS,11'bS)- (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

Me

● Br<sup>-</sup>

Me

L29 ANSWER 6 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2008:63876 CAPLUS

DOCUMENT NUMBER: 148:168968

TITLE: Preparation of optically-active  
 $\alpha$ -(trifluoroethyl)phenylalanine derivatives and  
their intermediates

INVENTOR(S): Kagawa, Takumi

PATENT ASSIGNEE(S): Tosoh Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 32pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

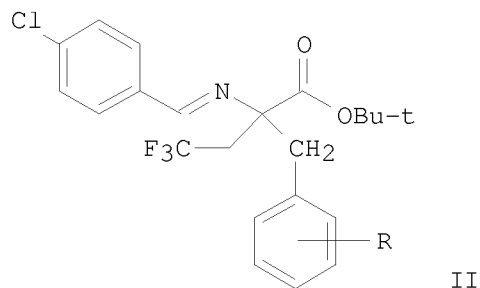
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008007460	A	20080117	JP 2006-179752	20060629
PRIORITY APPLN. INFO.:			JP 2006-179752	20060629
OTHER SOURCE(S):	MARPAT	148:168968		

GI



AB (R)- or (S)-RC<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>C(NH<sub>2</sub>)(CH<sub>2</sub>CF<sub>3</sub>)CO<sub>2</sub>CMe<sub>3</sub> [I; R = C<sub>1</sub>-10 (halo)alkyl, c<sub>1</sub>-10 alkoxy, H, halo], useful as intermediates for drugs, are prepared by hydrolyzing (R)-II or (S)-II (R = same as above), resp., in the presence of acids. (S)-II or (R)-II are prepared by reacting 4-ClC<sub>6</sub>H<sub>4</sub>CH:NCH(CH<sub>2</sub>CF<sub>3</sub>)CO<sub>2</sub>CMe<sub>3</sub> (III) with RC<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>Br (R = same as above) in the presence of chiral phase-transfer catalyst spirobis[[ (S)-1,1'-bi[4,6-bis(octyldimethylsilyl)naphthyl]]-2,2'-dimethyl]ammonium bromide (IV) or its stereoisomer and alkalis. III is prepared by reacting 4-ClC<sub>6</sub>H<sub>4</sub>CH:NCH<sub>2</sub>CO<sub>2</sub>CMe<sub>3</sub> (V) with Li isopropylamide and then CF<sub>3</sub>CH<sub>2</sub>I. Thus, a THF solution of V (preparation given) was added dropwise to

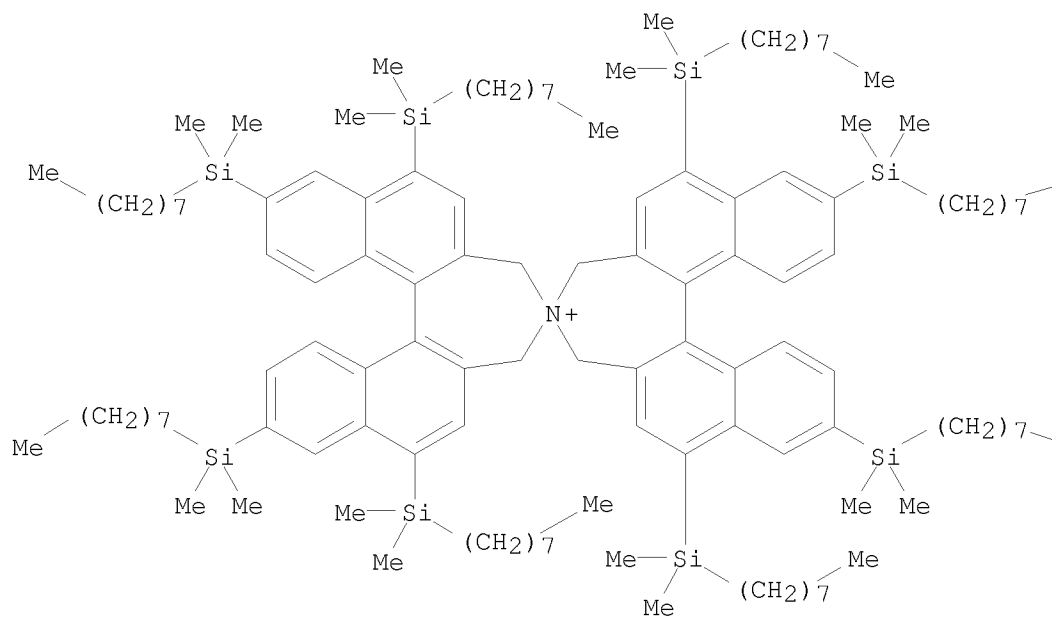
THF solution of Li isopropylamide at -80° over 30 min, the reaction mixture was stirred at -80° for 30 min, CF<sub>3</sub>CH<sub>2</sub>I was added dropwise over 10 min, the mixture was stirred at -80° for 30 min, gradually heated to room temperature over 2 h, and stirred at room temperature for 12 h to give

95% III. A mixture of III, spirobis[[ (S)-1,1'-bi[4,6-bis(octyldimethylsilyl)naphthyl]]-2,2'-dimethyl]ammonium bromide, toluene, PhCH<sub>2</sub>Br, and CsOH was stirred at -10° for 6 h to give 56% (S)-II (R = H). This was treated with HCl in toluene at 0° for 2 h to give 49% (S)-I (R = H) (92.1% e.e.).

10/587,467

IT 832745-40-1 1001921-20-5  
RL: CAT (Catalyst use); USES (Uses)  
(preparation of optically-active tert-Bu  
 $\alpha$ -(trifluoroethyl)phenylalaninates. and their intermediates)  
RN 832745-40-1 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
1,1',7,7',9,9',14,14'-octakis(dimethyloctylsilyl)-3,3',5,5'-tetrahydro-,  
bromide (1:1), (11bR,11'bR)- (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

Me

● Br<sup>-</sup>

Me

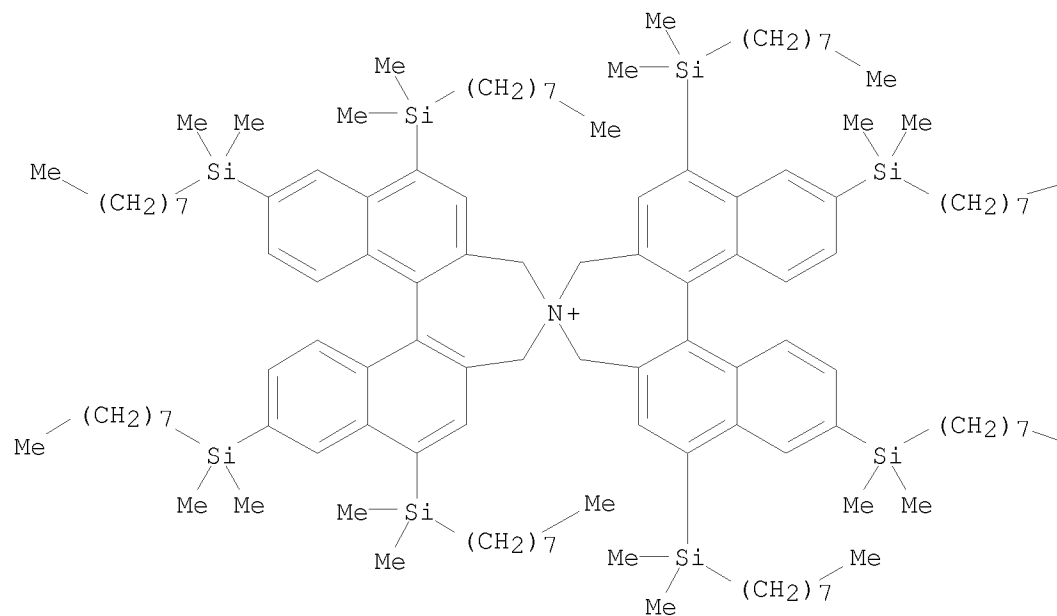


10/587,467

RN 1001921-20-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
1,1',7,7',9,9',14,14'-octakis(dimethyloctylsilyl)-3,3',5,5'-tetrahydro-,  
bromide (1:1), (11bS,11'bS)- (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

Me

● Br<sup>-</sup>

Me

L29 ANSWER 7 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2007:1345737 CAPLUS

DOCUMENT NUMBER: 148:54907

TITLE: Process for preparation of chiral bis-spiro quaternary ammonium salt phase transfer catalysts with binaphthyl axis

INVENTOR(S): Ma, Junan; Hua, Mingqing; Wang, Lian; Nie, Jing

PATENT ASSIGNEE(S): Tianjin University, Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 9pp.

CODEN: CNXXEV

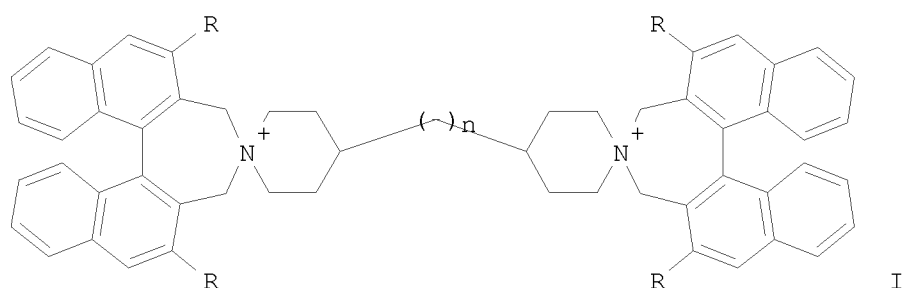
DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
CN 101073780	A	20071121	CN 2007-10057716	20070622
CN 100463720	C	20090225		
PRIORITY APPLN. INFO.:			CN 2007-10057716	20070622
OTHER SOURCE(S):		CASREACT 148:54907; MARPAT 148:54907		
GI				



AB This invention pertains to a method for preparation of chiral bis-spiro quaternary ammonium salts with (R)- or (S)- binaphthyl axis (I•2X-: wherein R = H, Ph, 3,5-dimethylphenyl, 3,5-bis(trifluoromethylphenyl), 4-nitrophenyl, 3,5-bis[3,5-bis(trifluoromethylphenyl)]phenyl, biphenyl-4-yl, 2-naphthyl, or 1-naphthyl; n = 0, 1, 2, 3, 4, 5, or 6; X = F, Cl, Br, or I) as phase-transfer catalysts. The process comprises reacting 3,3'-disubstituent-2,2'-bis(halomethyl)-1,1'-binaphthyl with di(piperidin-4-yl)alkane at a molar ratio of 2:1:2-8 in organic solvent in the presence of a base, washing, extracting, separating to obtain the title phase-transfer catalyst. The organic solvent is dichloromethane, chloroform, tetrachloromethane, ether, THF, benzene, toluene, xylene, acetonitrile, or Et acetate. The base is Na<sub>2</sub>CO<sub>3</sub>, K<sub>2</sub>CO<sub>3</sub>, Cs<sub>2</sub>CO<sub>3</sub>, LiOH, NaOH, KOH, or CsOH. The product can be used as phase-transfer catalyst for conjugate addition of nitroalkane with  $\alpha$ ,  $\beta$ -unsatd. carbonyl compds. with yield of 90-99% and ee value of 60-97%.

IT	960119-91-9P	960119-92-0P	960119-95-3P
	960119-98-6P	960120-01-8P	960120-04-1P
	960120-05-2P	960120-08-5P	960120-11-0P
	960120-14-3P	960120-17-6P	960121-05-5P

RL: CAT (Catalyst use); IMF (Industrial manufacture); SPN (Synthetic

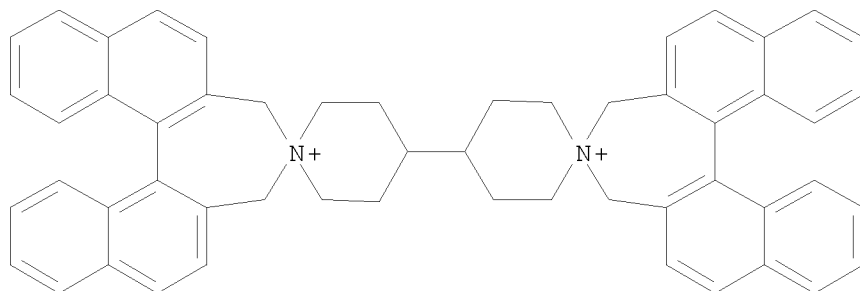
10/587,467

preparation); PREP (Preparation); USES (Uses)

(preparation of chiral bis-spiro quaternary ammonium salt phase-transfer catalyst with binaphthyl axis)

RN 960119-91-9 CAPLUS

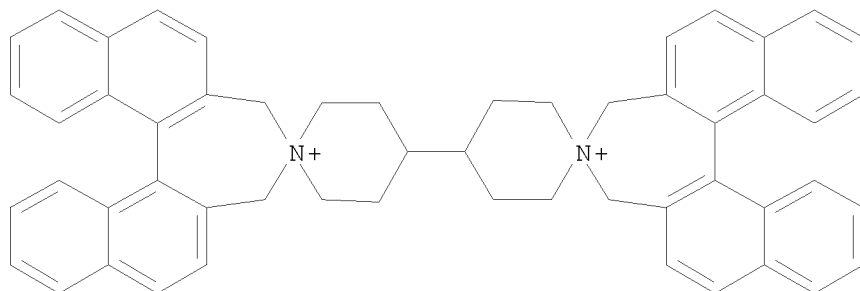
CN 4',4'''-Bispiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
3,3'',5,5'''-tetrahydro-, bromide (1:2), (11bR,11''bR)- (CA INDEX NAME)



● 2 Br<sup>-</sup>

RN 960119-92-0 CAPLUS

CN 4',4'''-Bispiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
3,3'',5,5'''-tetrahydro-, bromide (1:2), (11bS,11''bS)- (CA INDEX NAME)

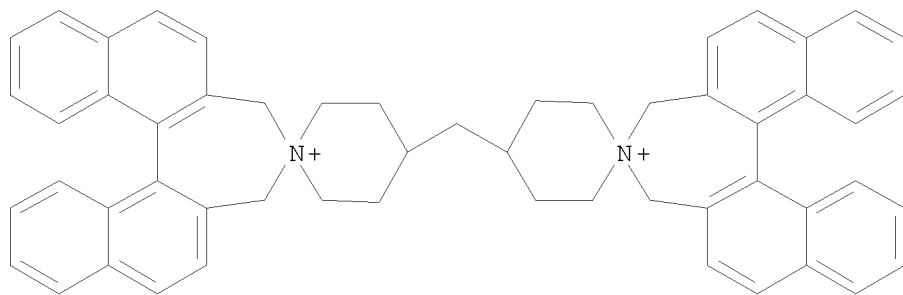


● 2 Br<sup>-</sup>

RN 960119-95-3 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
4',4'''-methylenebis[3,5-dihydro-, bromide (1:2), (11bR,11''bR)- (CA  
INDEX NAME)

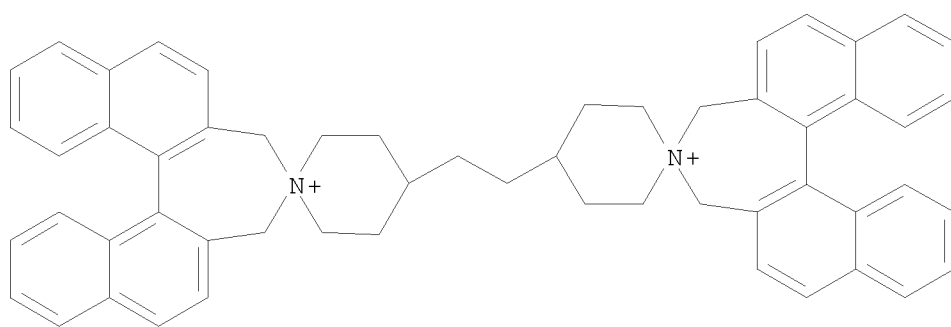
10/587,467



● 2 Br<sup>-</sup>

RN 960119-98-6 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
4',4'''-(1,2-ethanediyl)bis[3,5-dihydro-, bromide (1:2), (11bR,11''bR)-  
(CA INDEX NAME)]

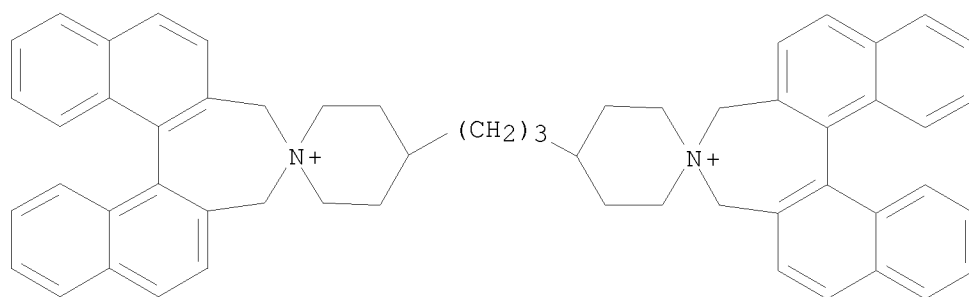


● 2 Br<sup>-</sup>

RN 960120-01-8 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
4',4'''-(1,3-propanediyl)bis[3,5-dihydro-, bromide (1:2), (11bR,11''bR)-  
(CA INDEX NAME)]

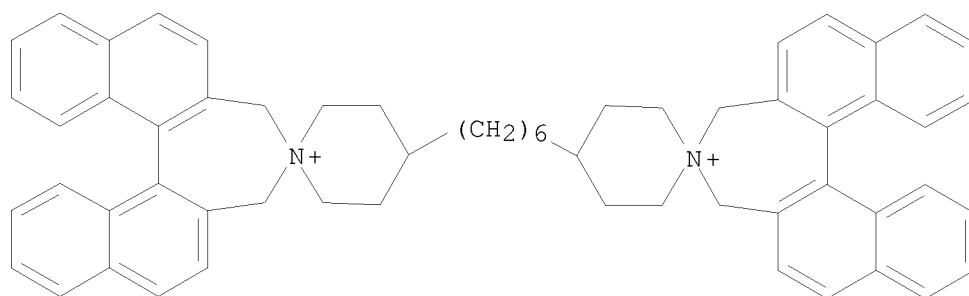
10/587,467



● 2 Br<sup>-</sup>

RN 960120-04-1 CAPLUS

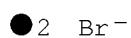
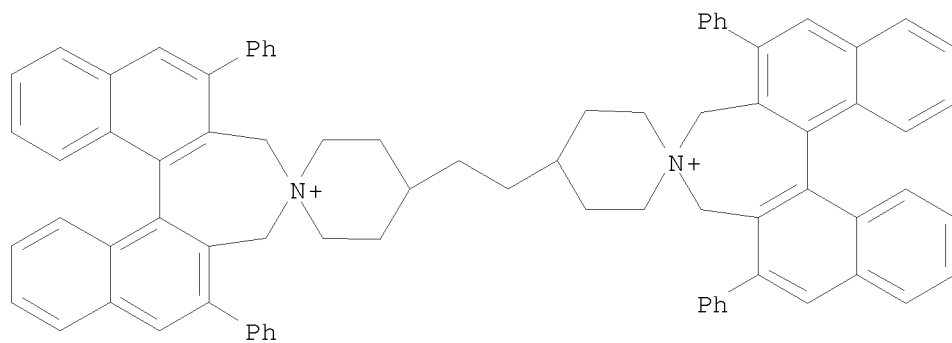
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
4',4'''-(1,6-hexanediyl)bis[3,5-dihydro-, bromide (1:2), (11bR,11''bR)-  
(CA INDEX NAME)



● 2 Br<sup>-</sup>

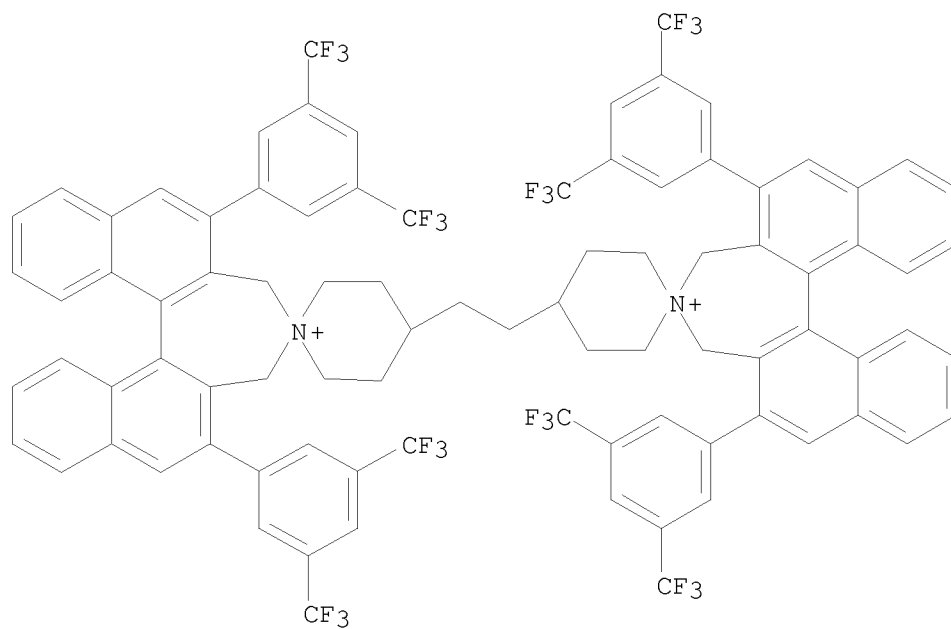
RN 960120-05-2 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
4',4'''-(1,2-ethanediyl)bis[3,5-dihydro-2,6-diphenyl-, bromide (1:2),  
(11bR,11''bR)- (CA INDEX NAME)

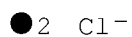


RN 960120-08-5 CAPLUS  
 CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
 4',4'''-(1,2-ethanediyl)bis[2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,5-  
 dihydro-, chloride (1:2), (11bR,11''bR)- (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

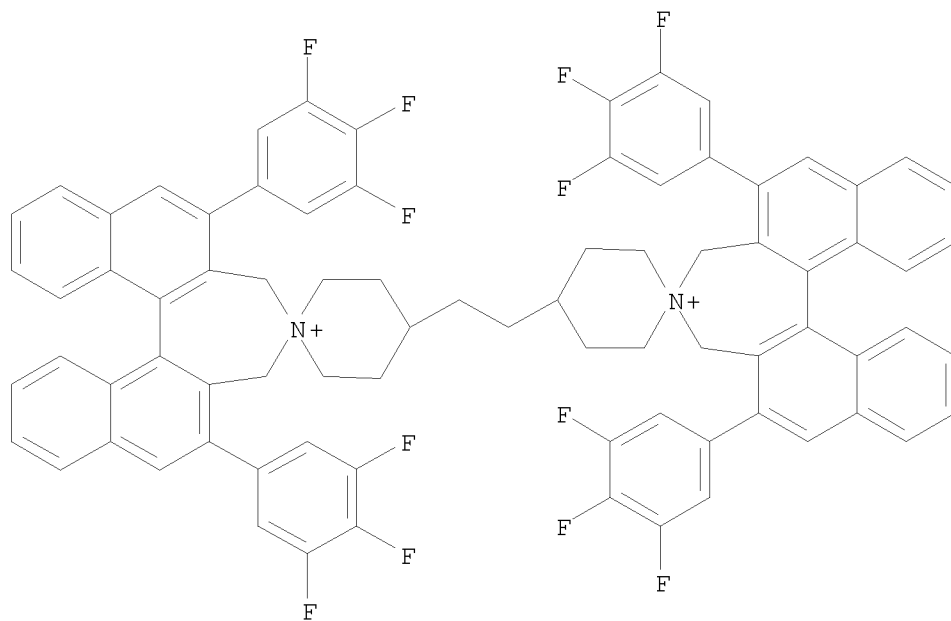


10/587,467

RN 960120-11-0 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
4',4'''-(1,2-ethanediyl)bis[3,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-,  
iodide (1:2), (11bR,11''bR)- (CA INDEX NAME)

PAGE 1-A

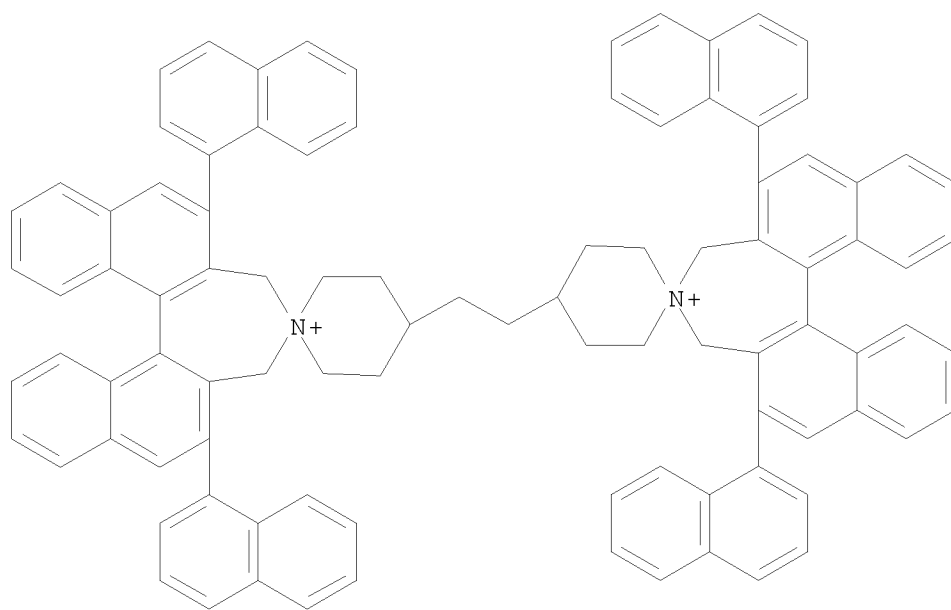


PAGE 2-A

● 2 I<sup>-</sup>

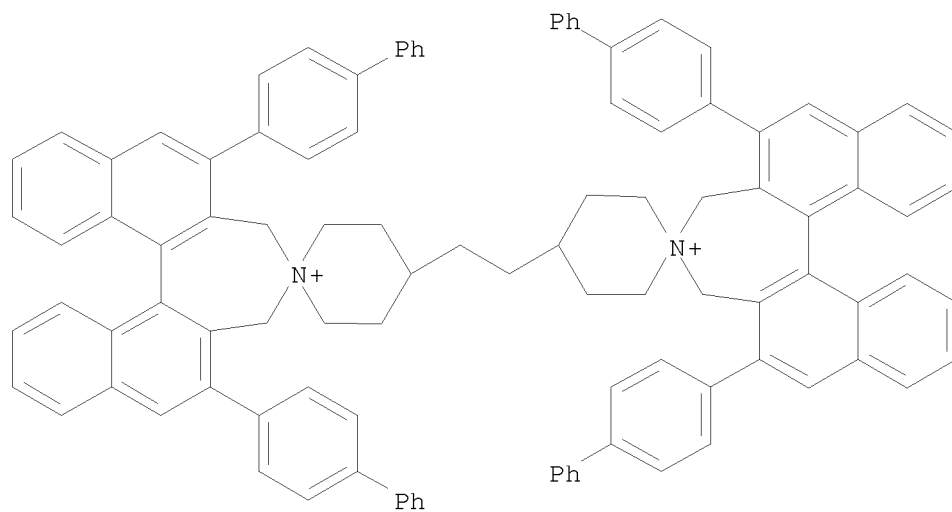
RN 960120-14-3 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
4',4'''-(1,2-ethanediyl)bis[3,5-dihydro-2,6-di-1-naphthalenyl-, fluoride  
(1:2), (11bR,11''bR)- (CA INDEX NAME)



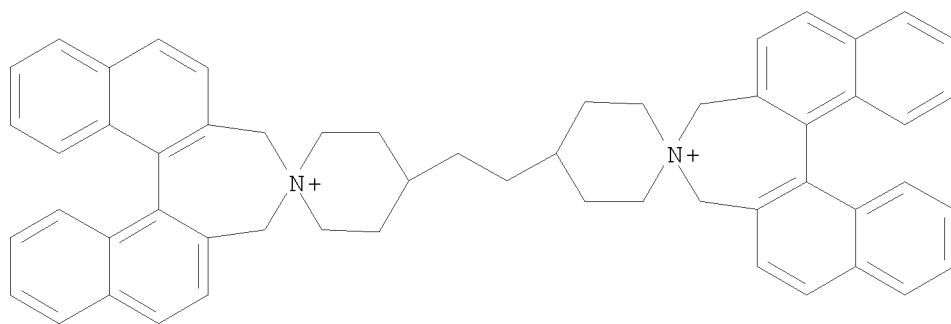
RN 960120-17-6 CAPLUS  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
4',4'''-(1,2-ethanediyl)bis[2,6-bis([1,1'-biphenyl]-4-yl)-3,5-dihydro-,  
bromide (1:2), (11bR,11''bR)- (CA INDEX NAME)





● 2 Br<sup>-</sup>

RN 960121-05-5 CAPLUS  
 CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
 4',4'''-(1,2-ethanediyl)bis[3,5-dihydro-, chloride (1:2), (11bR,11''bR)-  
 (CA INDEX NAME)]



● 2 Cl<sup>-</sup>

L29 ANSWER 8 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2007:728784 CAPLUS

DOCUMENT NUMBER: 147:142788

TITLE: Catalyst capable of allowing Strecker reaction to proceed stereoselectively and method for stereoselectively producing  $\alpha$ -aminonitrile derivative using the same

INVENTOR(S): Maruoka, Keiji; Ooi, Takashi

PATENT ASSIGNEE(S): Nagase &amp; Co., Ltd., Japan; Kyoto University

SOURCE: PCT Int. Appl., 396pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007074553	A1	20070705	WO 2006-JP314023	20060707
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				

PRIORITY APPLN. INFO.: JP 2005-373490 A 20051226

AB According to the invention, a catalyst for a Strecker reaction comprising a quaternary ammonium salt and a method for stereoselectively producing an  $\alpha$ -aminonitrile derivative using the same are provided. By using the  $\alpha$ -aminonitrile derivative obtained by the invention, an optically active  $\alpha$ -amino acid and a derivative thereof, which were difficult to produce by a conventional alkylation reaction can be easily produced.

IT 881881-98-7P 881881-99-8P 881882-01-5P

881882-03-7P 881882-65-1P

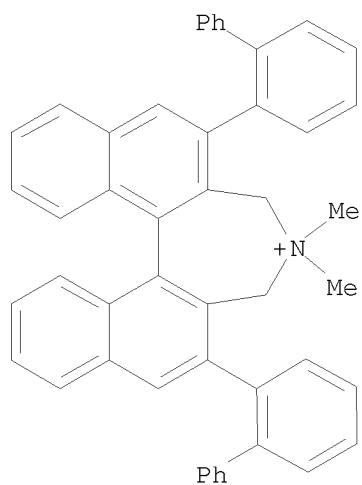
RL: CAT (Catalyst use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(catalyst capable of allowing Strecker reaction to proceed stereoselectively and method for stereoselectively producing  $\alpha$ -aminonitrile derivative using the same)

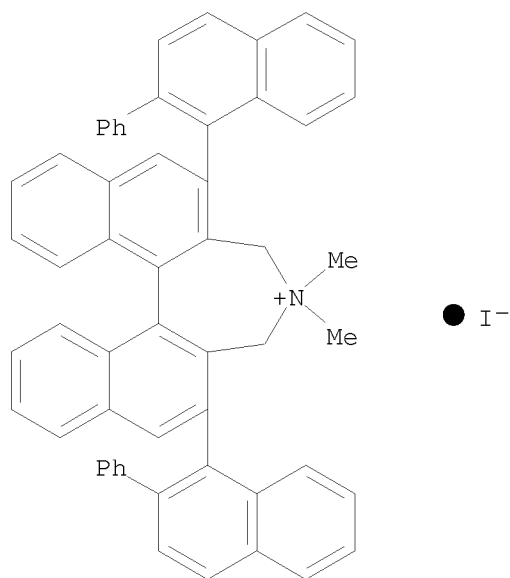
RN 881881-98-7 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
2,6-bis([1,1'-biphenyl]-2-yl)-4,5-dihydro-4,4-dimethyl-, iodide (1:1),  
(2R,6R,11bR)- (CA INDEX NAME)

10/587,467

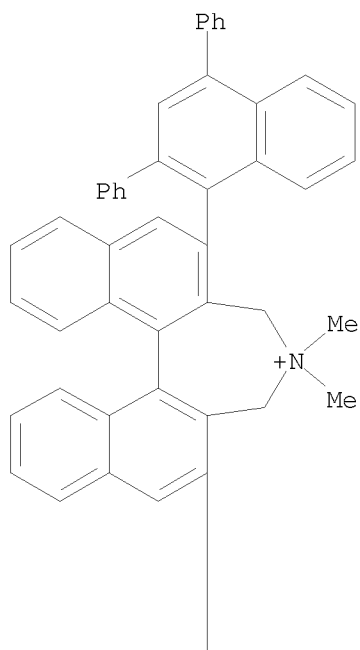


RN 881881-99-8 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-dimethyl-2,6-bis(2-phenyl-1-naphthalenyl)-, iodide (1:1),  
(2R,6R,11bR)- (CA INDEX NAME)

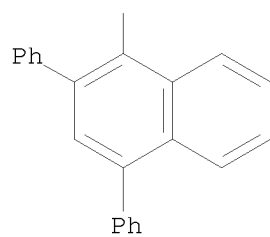


RN 881882-01-5 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
2,6-bis(2,4-diphenyl-1-naphthalenyl)-4,5-dihydro-4,4-dimethyl-, iodide  
(1:1), (2R,6R,11bR)- (CA INDEX NAME)

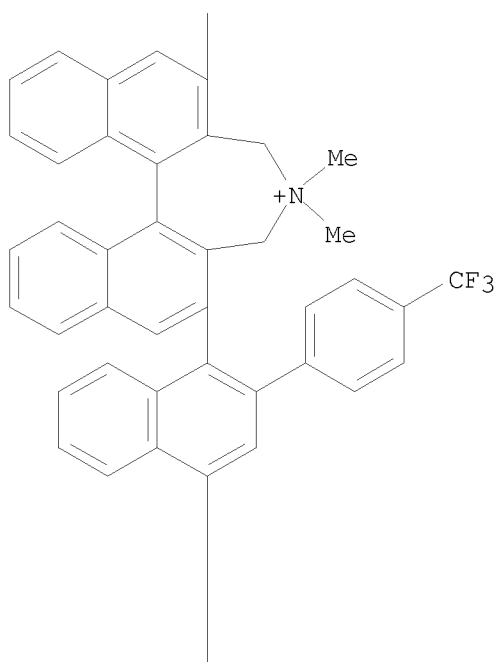
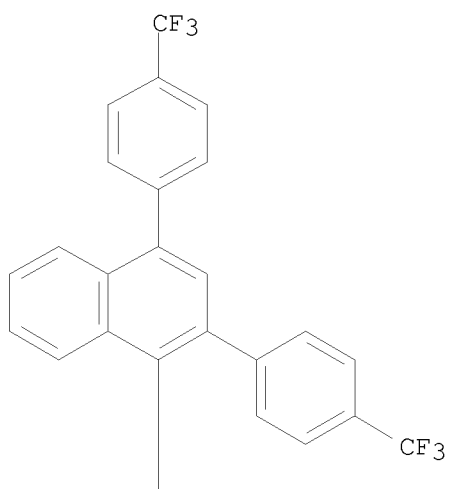
PAGE 1-A

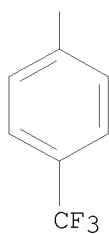


PAGE 2-A



RN 881882-03-7 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 2,6-bis[2,4-bis[4-(trifluoromethyl)phenyl]-1-naphthalenyl]-4,5-dihydro-4,4-  
 dimethyl-, iodide, (2R,6R,11bR)- (CA INDEX NAME)



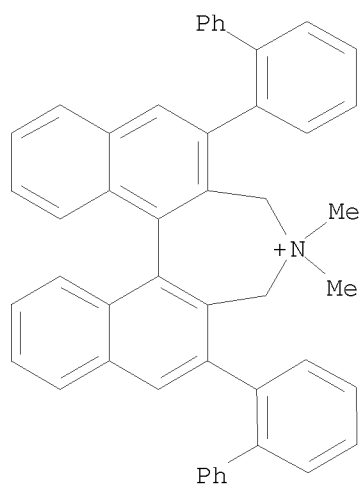


RN 881882-65-1 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 2,6-bis([1,1'-biphenyl]-2-yl)-4,5-dihydro-4,4-dimethyl-, (2R,6R,11bR)-,  
 hexafluorophosphate(1-) (1:1) (CA INDEX NAME)

CM 1

CRN 881882-64-0

CMF C48 H38 N

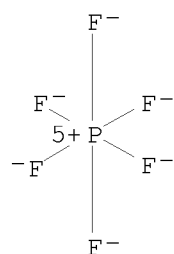


CM 2

CRN 16919-18-9

CMF F6 P

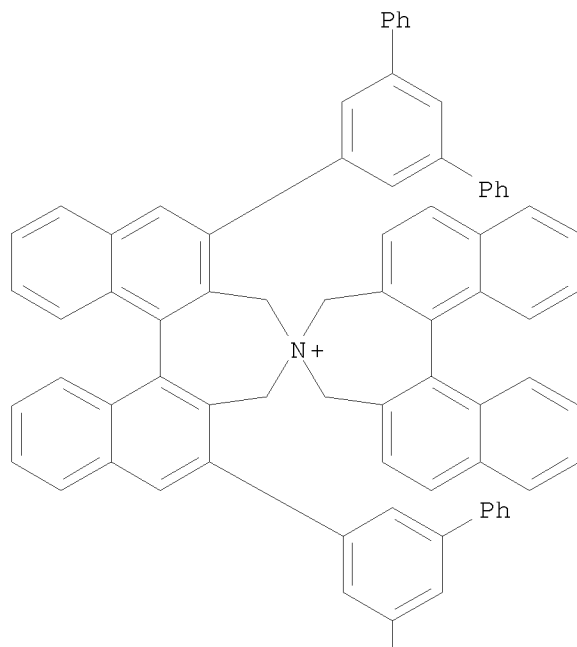
CCI CCS



IT 466679-93-6 943321-70-8 943321-72-0  
 943321-74-2  
 RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES  
 (Uses)  
 (catalyst capable of allowing Strecker reaction to proceed  
 stereoselectively and method for stereoselectively producing  
 $\alpha$ -aminonitrile derivative using the same)

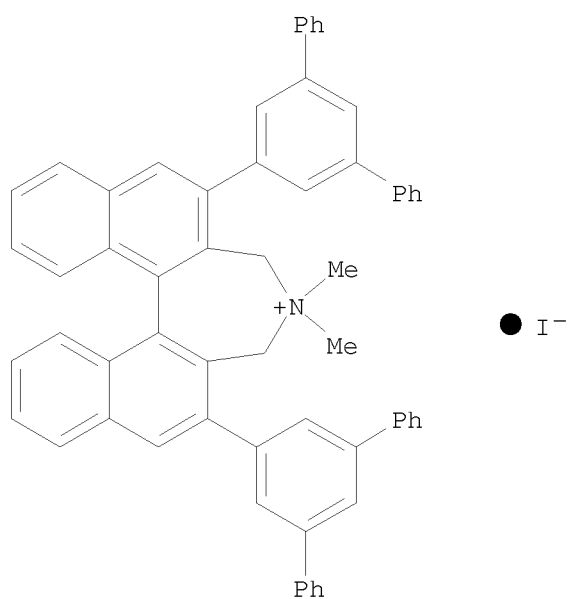
RN 466679-93-6 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 2,6-bis([1,1':3',1''-terphenyl]-5'-yl)-3,3',5,5'-tetrahydro-, bromide  
 (1:1), (11bR,11'bR)- (CA INDEX NAME)

PAGE 1-A





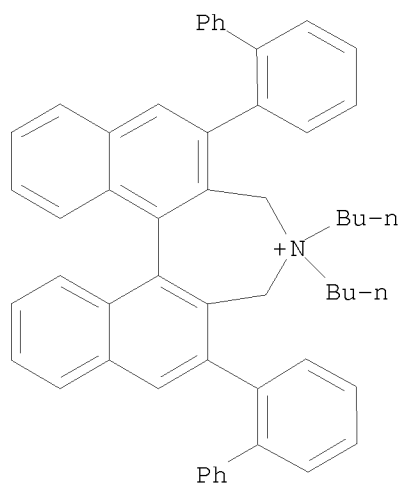
RN 943321-70-8 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4,5-dihydro-4,4-dimethyl-2,6-bis([1,1':3',1''-terphenyl]-5'-yl)-, iodide  
 (1:1), (11bR)- (CA INDEX NAME)



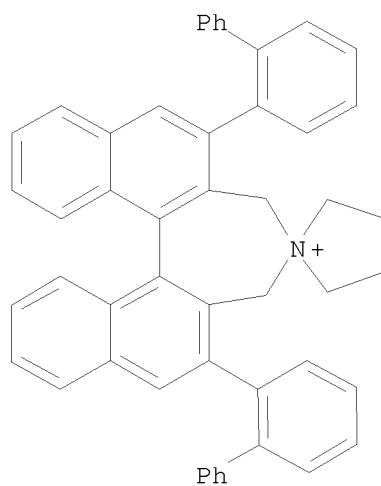
RN 943321-72-0 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 2,6-bis([1,1'-biphenyl]-2-yl)-4,4-dibutyl-4,5-dihydro-, bromide (1:1),  
 (2R,6R,11bR)- (CA INDEX NAME)



10/587,467



RN 943321-74-2 CAPLUS  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-pyrrolidinium],  
2,6-bis([1,1'-biphenyl]-2-yl)-3,5-dihydro-, bromide (1:1), (2R,6R,11bR)-  
(CA INDEX NAME)



IT 943321-58-2P 943321-60-6P  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN  
(Synthetic preparation); PREP (Preparation); PROC (Process)  
(crystallog.; catalyst capable of allowing Strecker reaction to proceed)

10/587,467

stereoselectively and method for stereoselectively producing  
 $\alpha$ -aminonitrile derivative using the same)

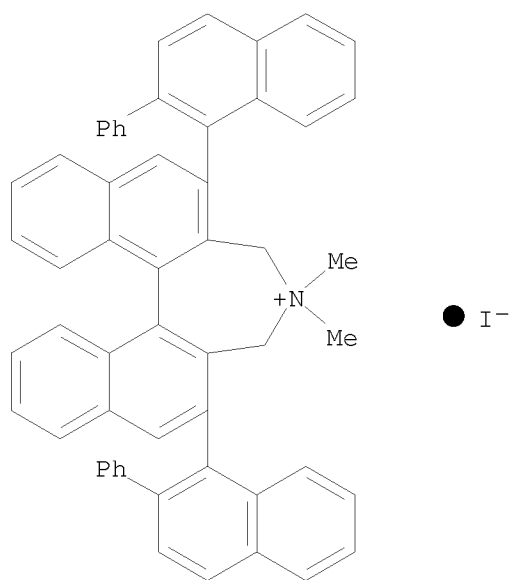
RN 943321-58-2 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-dimethyl-2,6-bis(2-phenyl-1-naphthalenyl)-, iodide,  
(2R,6R,11bR)-, compd. with dichloromethane (1:1:3) (CA INDEX NAME)

CM 1

CRN 881881-99-8

CMF C56 H42 N . I



CM 2

CRN 75-09-2

CMF C H2 C12

C1-CH<sub>2</sub>-C1

RN 943321-60-6 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
2,6-bis([1,1'-biphenyl]-2-yl)-4,5-dihydro-4,4-dimethyl-, (2R,6R,11bR)-,  
hexafluorophosphate(1-), compd. with tetrahydrofuran (1:1:4) (CA INDEX  
NAME)

CM 1

CRN 109-99-9

CMF C4 H8 O

10/587,467



CM 2

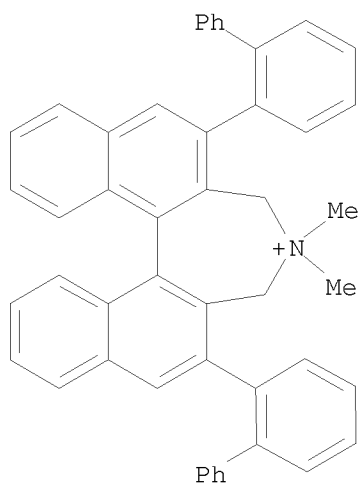
CRN 881882-65-1

CMF C48 H38 N . F6 P

CM 3

CRN 881882-64-0

CMF C48 H38 N

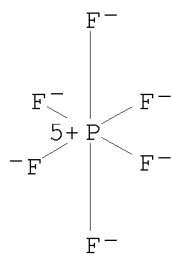


CM 4

CRN 16919-18-9

CMF F6 P

CCI CCS



REFERENCE COUNT:

20

THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

10/587,467

L29 ANSWER 9 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2007:115702 CAPLUS

DOCUMENT NUMBER: 146:206091

TITLE: Preparation of axis-asymmetric optically active quaternary ammonium salt as phase transfer catalyst for the synthesis of chiral amino acid

INVENTOR(S): Maruoka, Keiji; Matsumoto, Jun

PATENT ASSIGNEE(S): Nagase &amp; Co., Ltd., Japan

SOURCE: PCT Int. Appl., 135pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007013697	A1	20070201	WO 2006-JP315456	20060728
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW			
RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			

PRIORITY APPLN. INFO.: JP 2005-221451 A 20050729

JP 2005-224761 A 20050802

OTHER SOURCE(S): MARPAT 146:206091

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Title compds. I [R1-R6 and R11-R16 = H, cyano, nitro, etc.; R7 = alkyl (wherein alkyl is optionally substituted with halo, or may be branched or cyclic.); R8 = alkyl (wherein alkyl is optionally substituted with halo, or may be branched or cyclic.); X- = halogen anion, SCN-, HSO4-, etc.] were prepared. For example, reaction of compound II, e.g., prepared from (S)-binaphthyl-2,2'-dicarboxylic acid in 5 steps, with dieicosylamine afforded compound III. A stereoselective alkylation of glycine and alanine derivs. using compds. I was accomplished.: to a solution of N-(Diphenylmethylene)glycine tert-Bu ester (88.6 mg), compound III/CH2Cl2 (0.003 M, 0.1 mL) and 50% aqueous KOH (1.0 mL) in toluene (1.0 mL) was added tert-Bu bromoacetate (70.2 mg) at 0°, the reaction was stirred for 4 h to give N-(diphenylmethylene)-D-aspartic acid, bis(1,1-dimethylethyl) ester in 91% yield and 99% ee.

IT 851942-89-7P 922732-71-6P 922732-72-7P

922732-73-8P

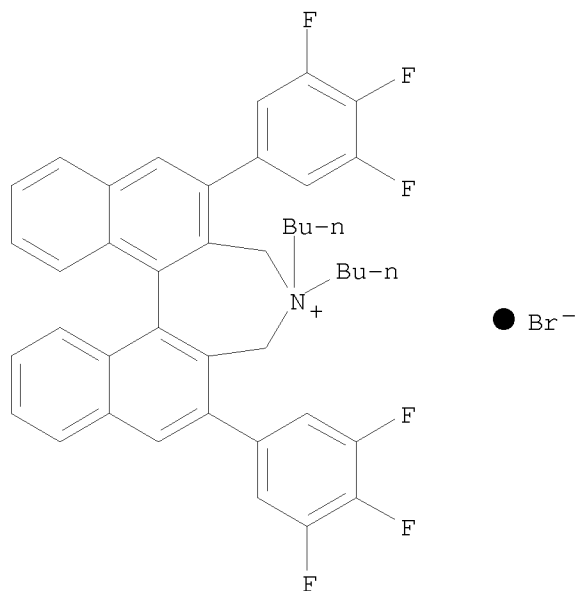
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

10/587,467

(preparation of axis-asym. optically active quaternary ammonium salt as  
phase transfer catalyst for the synthesis of chiral amino acid)

RN 851942-89-7 CAPLUS

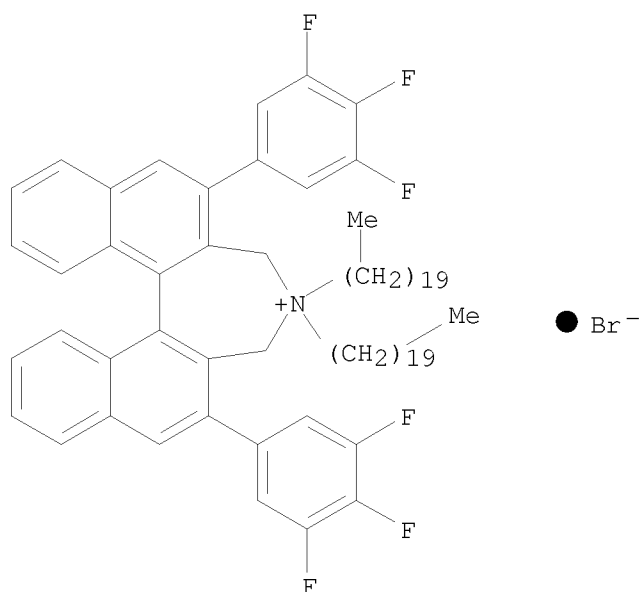
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)



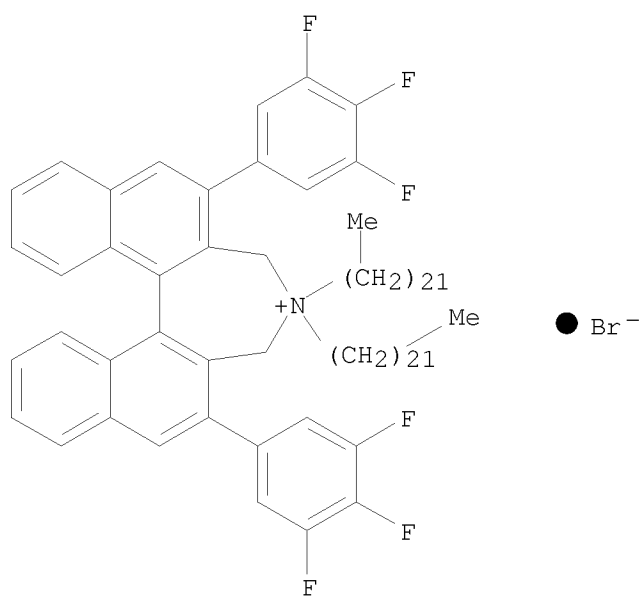
RN 922732-71-6 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dieicosyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)

10/587,467

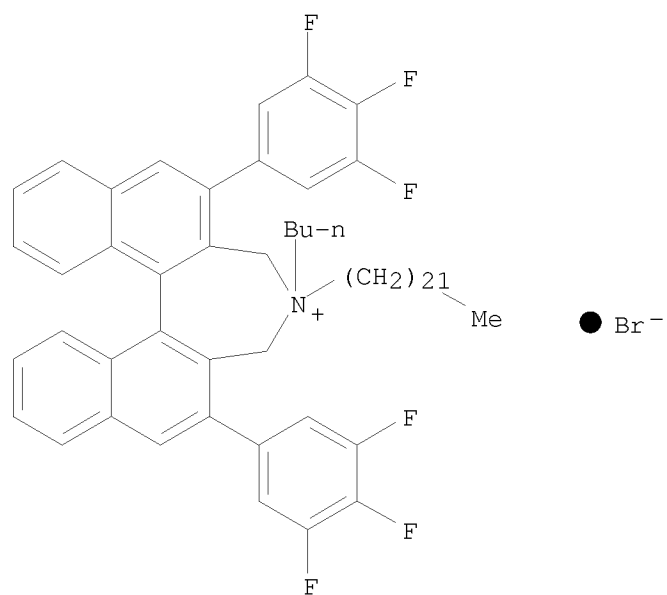


RN 922732-72-7 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4'-didocosyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)



RN 922732-73-8 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4-butyl-4-docosyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide  
(1:1), (11bS)- (CA INDEX NAME)

10/587,467



REFERENCE COUNT:

13

THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT



L29 ANSWER 10 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2007:114256 CAPLUS

DOCUMENT NUMBER: 146:206634

TITLE: Process for production of mono-substituted alkylated compound using aldimine or derivative thereof

INVENTOR(S): Maruoka, Keiji; Inoue, Toru; Matsumoto, Jun

PATENT ASSIGNEE(S): Nagase &amp; Co., Ltd., Japan

SOURCE: PCT Int. Appl., 173pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007013698	A1	20070201	WO 2006-JP315457	20060728
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW			
RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
CA 2610776	A1	20070201	CA 2006-2610776	20060728
EP 1930315	A1	20080611	EP 2006-782315	20060728
R:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR			
IN 2007KN04606	A	20080606	IN 2007-KN4606	20071128
CN 101233099	A	20080730	CN 2006-80027800	20080129
US 20090054679	A1	20090226	US 2008-997168	20080129
PRIORITY APPLN. INFO.:			JP 2005-220757	A 20050729
			JP 2005-348518	A 20051201
			WO 2006-JP315457	W 20060728

OTHER SOURCE(S): MARPAT 146:206634

AB Disclosed is a process for producing an asym. mono-substituted alkylated compound of an  $\alpha$ -amino acid which is represented by a specific formula by using an aldimine-type Schiff base R15-[CH=N-CH(R18)COR20]<sub>n</sub> [R15, R18 = independently (halo)alkyl, (halo)alkoxy, (halo)aryl, etc.; R20 = aryloxy, amino, alkyl, etc.; n = 1-4]. In the process, the alkylation of an aldimine-type Schiff base in a medium in the presence of an optically active quaternary ammonium salt phase transfer catalyst and an inorg. base is started, and subsequently the reaction is quenched at any time preceding the completion of the stoichiometrical reaction, thereby yielding a mono-substituted alkylated product having a high optical purity.

IT 851942-89-7 887938-70-7 923286-77-5

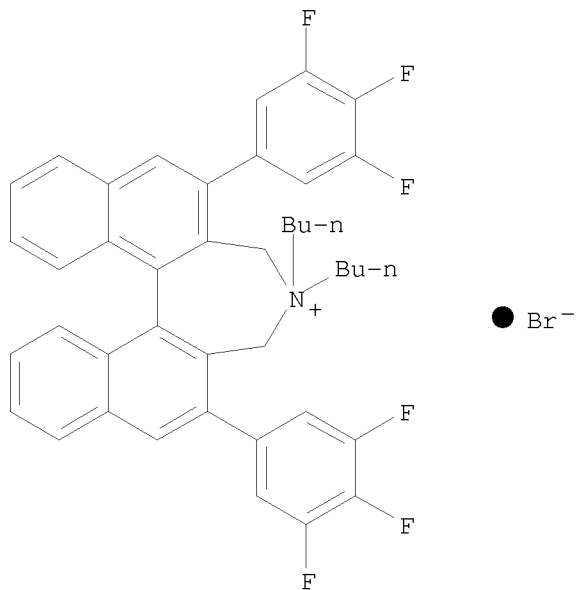
RL: CAT (Catalyst use); USES (Uses)

(preparation of mono-substituted alkylated compound using aldimine or derivative thereof)

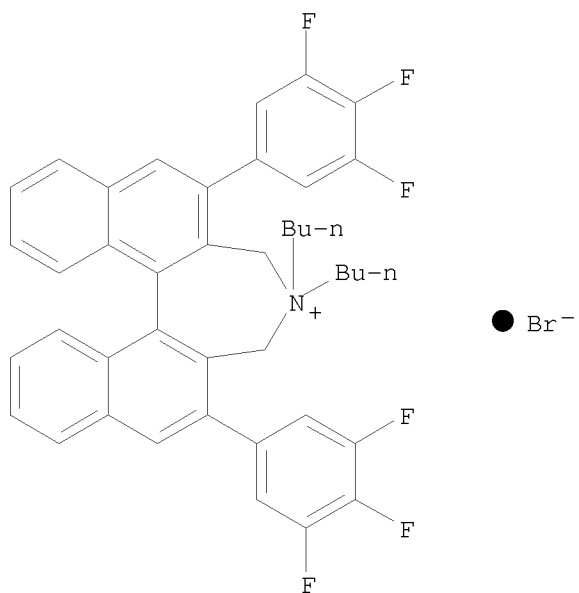
RN 851942-89-7 CAPLUS

10/587,467

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)

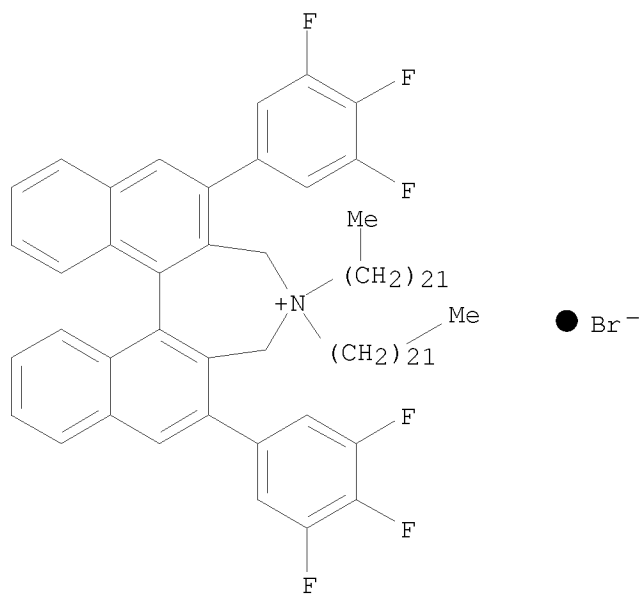


RN 887938-70-7 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bR)- (CA INDEX NAME)



10/587,467

RN 923286-77-5 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-didocosyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bR)- (CA INDEX NAME)



REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 11 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2006:1031261 CAPLUS

DOCUMENT NUMBER: 145:419469

TITLE: Preparation of optically active quaternary ammonium salts having axial asymmetry and process for producing  $\alpha$ -amino acids and derivatives thereof using said quaternary ammonium salts as phase transfer catalysts

INVENTOR(S): Maruoka, Keiji; Nishimoto, Yukifumi; Yamamoto, Kenichiro

PATENT ASSIGNEE(S): Nagase & Co., Ltd., Japan; Kyoto University

SOURCE: PCT Int. Appl., 374pp.

CODEN: PIXXD2

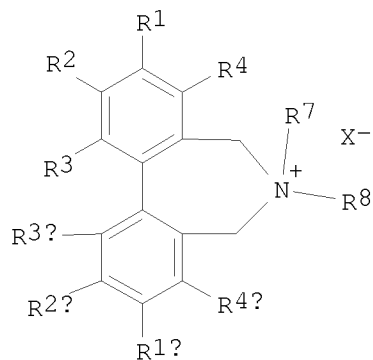
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

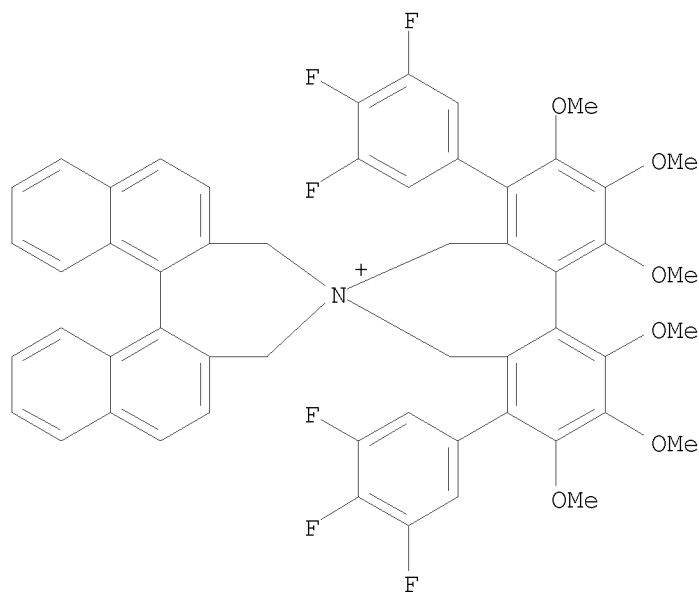
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 2006104226	A1	20061005	WO 2006-JP306791	20060324
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
EP 1870403	A1	20071226	EP 2006-730739	20060324
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR				
PRIORITY APPLN. INFO.:			JP 2005-94873	A 20050329
			WO 2006-JP306791	W 20060324
OTHER SOURCE(S):		MARPAT 145:419469		
GI				



- AB The title quaternary ammonium salts I [R1, R1a, R2, R2a = H, halo, (un)substituted alkyl, etc.; R3, R3a = halo, (un)substituted alkyl, (un)substituted alkoxy; R4, R4a = H, cyano, nitro, etc.; R7, R8 = (halo)alkyl, (halo)alkenyl, (halo)alkynyl, etc.; X- = SCN-, HSO4-, etc.] are prepared. The preparation of  $\alpha$ -amino acids using said quaternary ammonium salts as phase transfer catalysts is disclosed. Thus, reaction of N-(diphenylmethylene)glycine tert-Bu ester with benzyl bromide in a mixture of aqueous KOH and toluene containing an optically active quaternary ammonium salt of this invention gave (R)-tert-Bu N-(diphenylmethylene)phenylalanine (98% ee) in 95% yield.
- IT 911822-57-6P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation of optically active quaternary ammonium salts having axial asymmetry and process for producing  $\alpha$ -amino acids and derivs. thereof using said quaternary ammonium salts as phase transfer catalysts)
- RN 911822-57-6 CAPLUS
- CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium], 3',5,5',7-tetrahydro-1,2,3,9,10,11-hexamethoxy-4,8-bis(3,4,5-trifluorophenyl)-, bromide, (11aR,11'bR)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

● Br<sup>-</sup>

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

10/587,467

L29 ANSWER 12 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2006:917470 CAPLUS

DOCUMENT NUMBER: 145:314644

TITLE: Optically active quaternary ammonium salts as catalysts for the preparation of chiral  $\alpha$ -aminoacid

INVENTOR(S): Maruoka, Keiji; Kubota, Yasushi

PATENT ASSIGNEE(S): Kyoto University, Japan; Nippon Soda Co., Ltd.

SOURCE: PCT Int. Appl., 69pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006093269	A1	20060908	WO 2006-JP304091	20060303
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
EP 1854796	A1	20071114	EP 2006-715174	20060303
R:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, YU			
CN 101146812	A	20080319	CN 2006-80006577	20070830
IN 2007KN03319	A	20080118	IN 2007-KN3319	20070907
PRIORITY APPLN. INFO.:			JP 2005-59694	A 20050303
			JP 2005-192757	A 20050630
			WO 2006-JP304091	W 20060303
OTHER SOURCE(S):	MARPAT 145:314644			
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Title compds. I [R1 = halo, (un)substituted alkyl, (un)substituted alkenyl, etc.; R2, R21 = H, halo, nitro, etc.; R1 and R21, R2 and R21 may combine to form (un)substituted alkylene, (un)substituted alkylenemonooxy, (un)substituted alkylenedioxy; R3, R4 = H, (un)substituted aryl, (un)substituted heteroaryl, etc.; excluding R3 = R4 = H; R5 = H, halo, (un)substituted cyclic alkyl, etc.; R6 = halo, (un)substituted cyclic alkyl, (un)substituted cyclic alkoxy, etc.; ring A and B have different substituents.; \*, \*\* = chiral axis; X- = anion] were prepared For example, compound II was reacted with the racemic biphenyl compound III and K2CO3 in acetonitrile, chromatographed to give compound IV in 94% yield. Treatment

of tert-Bu (benzhydrylideneamino)acetate (74 mg) with benzyl bromide (36  $\mu$ L), 50% aqueous KOH (0.5 mL) and compound IV (2 mg) in toluene (2 mL) at 0 °C for 8 h afforded tert-Bu

2-(benzhydrylideneamino)-3-phenylpropionate in 95% yield and 97% ee.

IT 909134-76-5P 909134-78-7P 909134-79-8P  
 909134-80-1P 909134-82-3P 909134-84-5P  
 909134-86-7P 909134-87-8P 909134-88-9P  
 909134-90-3P 909134-91-4P 909293-50-1P  
 909293-52-3P 909293-53-4P 909293-54-5P  
 909293-55-6P 909293-68-1P

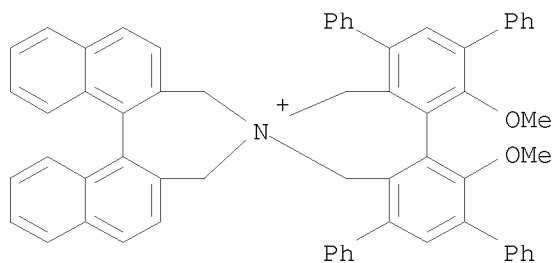
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);

USES (Uses)

(optically active quaternary ammonium salts as catalysts for preparation of chiral  $\alpha$ -aminoacid)

RN 909134-76-5 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium], 5,7,7',9'-tetrahydro-1,11-dimethoxy-2,4,8,10-tetraphenyl-, bromide (1:1) (CA INDEX NAME)



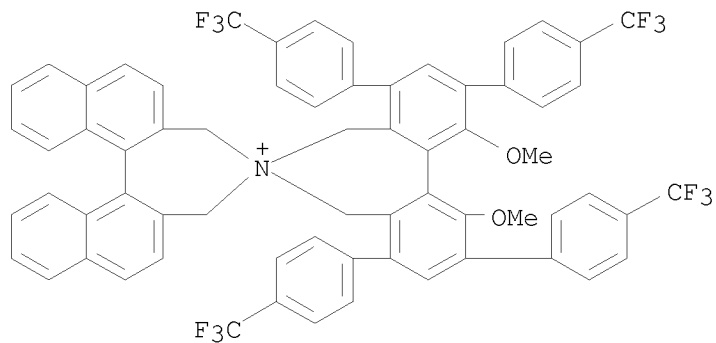
● Br<sup>-</sup>

RN 909134-78-7 CAPLUS

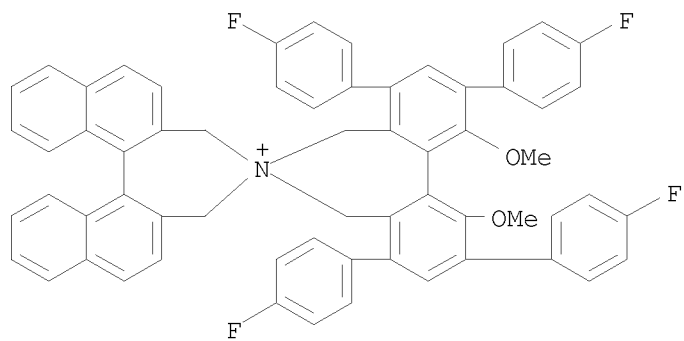
CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium], 5,7,7',9'-tetrahydro-1,11-dimethoxy-2,4,8,10-tetrakis[4-(trifluoromethyl)phenyl]-, bromide (1:1) (CA INDEX NAME)



10/587,467

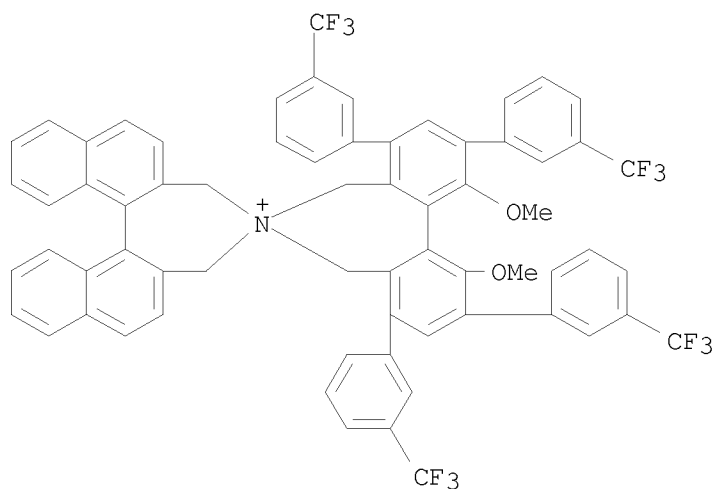


RN 909134-79-8 CAPLUS  
CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium],  
2,4,8,10-tetrakis(4-fluorophenyl)-5,7,7',9'-tetrahydro-1,11-dimethoxy-,  
bromide (1:1) (CA INDEX NAME)



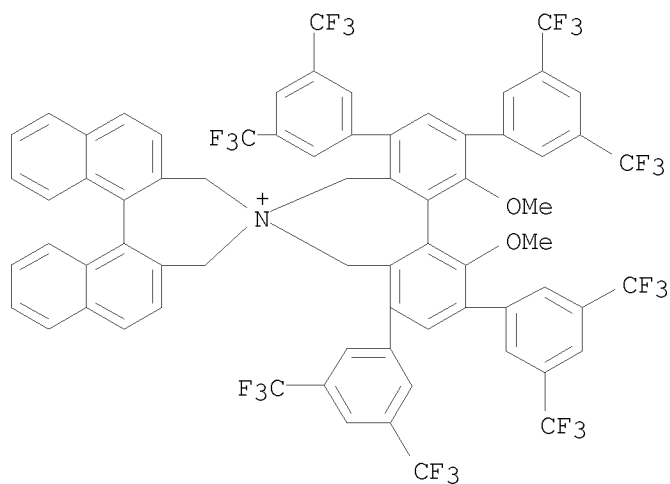
RN 909134-80-1 CAPLUS  
CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium],  
5,7,7',9'-tetrahydro-1,11-dimethoxy-2,4,8,10-tetrakis[3-(trifluoromethyl)phenyl]-, bromide (1:1) (CA INDEX NAME)

10/587,467



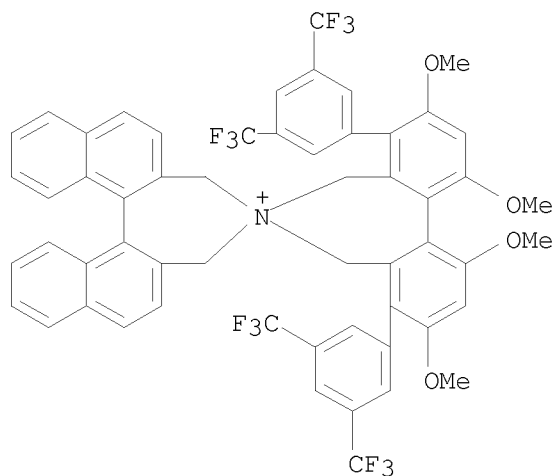
RN 909134-82-3 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium],  
2,4,8,10-tetrakis[3,5-bis(trifluoromethyl)phenyl]-5,7,7',9'-tetrahydro-  
1,11-dimethoxy-, bromide (1:1) (CA INDEX NAME)



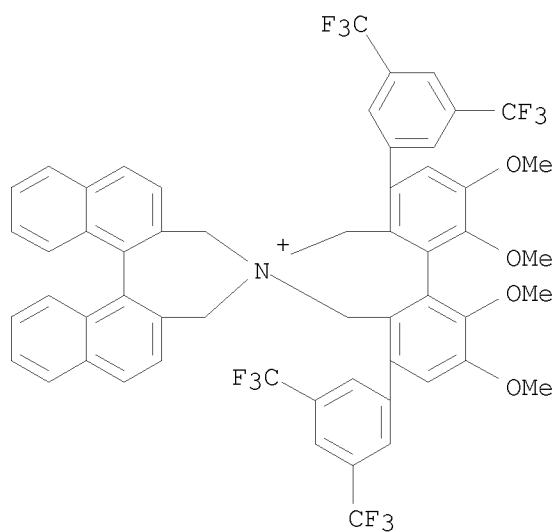
RN 909134-84-5 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium],  
4,8-bis[3,5-bis(trifluoromethyl)phenyl]-5,7,7',9'-tetrahydro-1,3,9,11-  
tetramethoxy-, bromide (1:1) (CA INDEX NAME)



RN 909134-86-7 CAPLUS

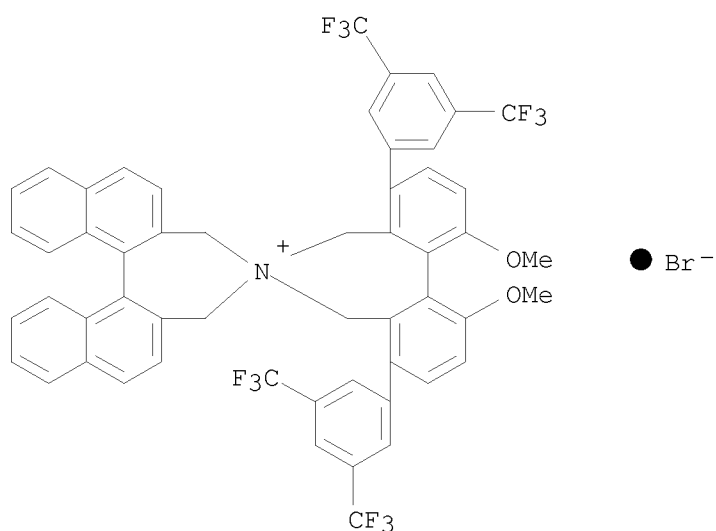
CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium],  
4,8-bis[3,5-bis(trifluoromethyl)phenyl]-5,7,7',9'-tetrahydro-1,2,10,11-  
tetramethoxy-, bromide (1:1) (CA INDEX NAME)



RN 909134-87-8 CAPLUS

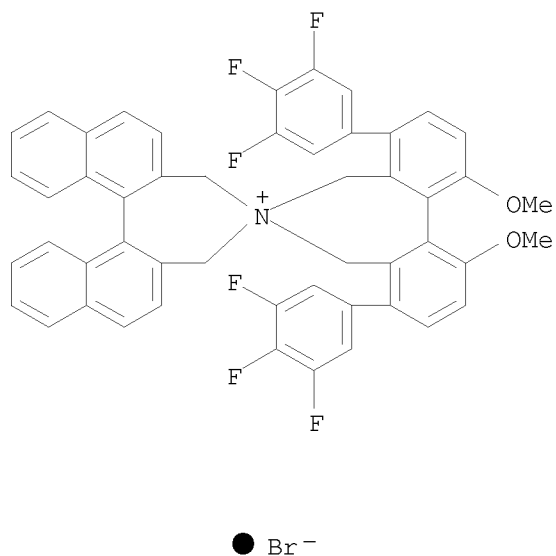
CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium],  
4,8-bis[3,5-bis(trifluoromethyl)phenyl]-5,7,7',9'-tetrahydro-1,11-  
dimethoxy-, bromide (1:1) (CA INDEX NAME)

10/587,467



RN 909134-88-9 CAPLUS

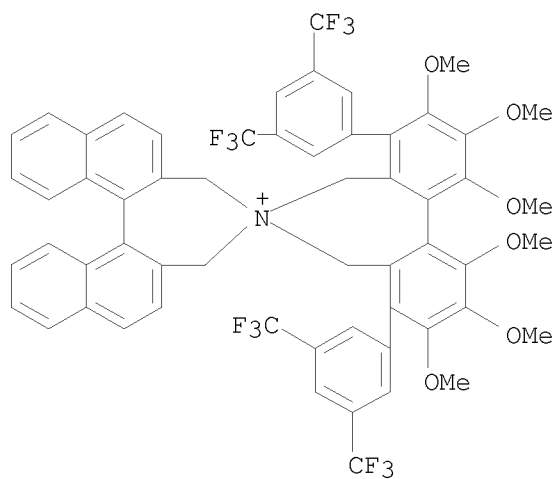
CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium],  
5,7,7',9'-tetrahydro-1,11-dimethoxy-4,8-bis(3,4,5-trifluorophenyl)-,  
bromide (1:1) (CA INDEX NAME)



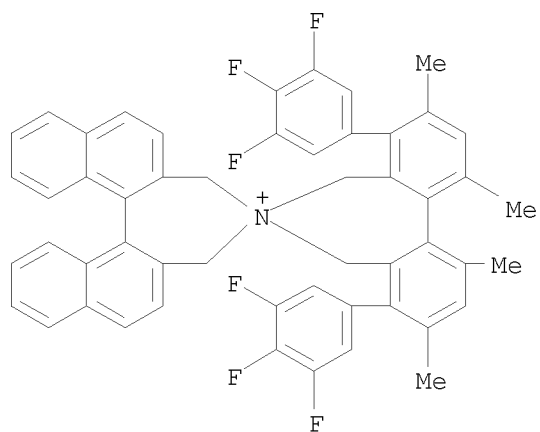
RN 909134-90-3 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium],  
4,8-bis[3,5-bis(trifluoromethyl)phenyl]-5,7,7',9'-tetrahydro-1,2,3,9,10,11-  
hexamethoxy-, bromide (1:1) (CA INDEX NAME)

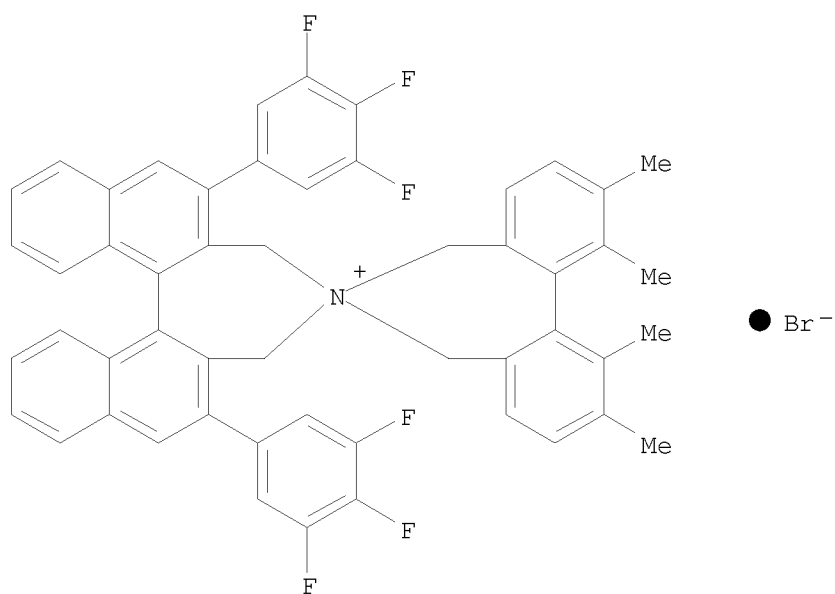
10/587,467



RN 909134-91-4 CAPLUS  
CN Spiro[6H-dibenz[c,e]azepine-6,8'-[8H]dinaphth[2,1-c:1',2'-e]azepinium],  
5,7,7',9'-tetrahydro-1,3,9,11-tetramethyl-4,8-bis(3,4,5-trifluorophenyl)-,  
bromide (1:1) (CA INDEX NAME)

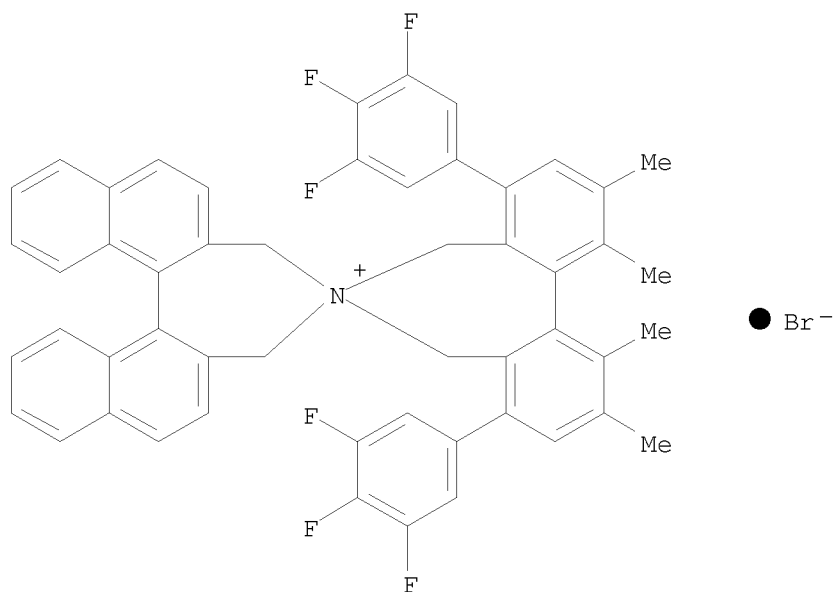


RN 909293-50-1 CAPLUS  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-1,2,10,11-tetramethyl-2',6'-bis(3,4,5-  
trifluorophenyl)-, bromide, (11aS,11'bS)- (9CI) (CA INDEX NAME)



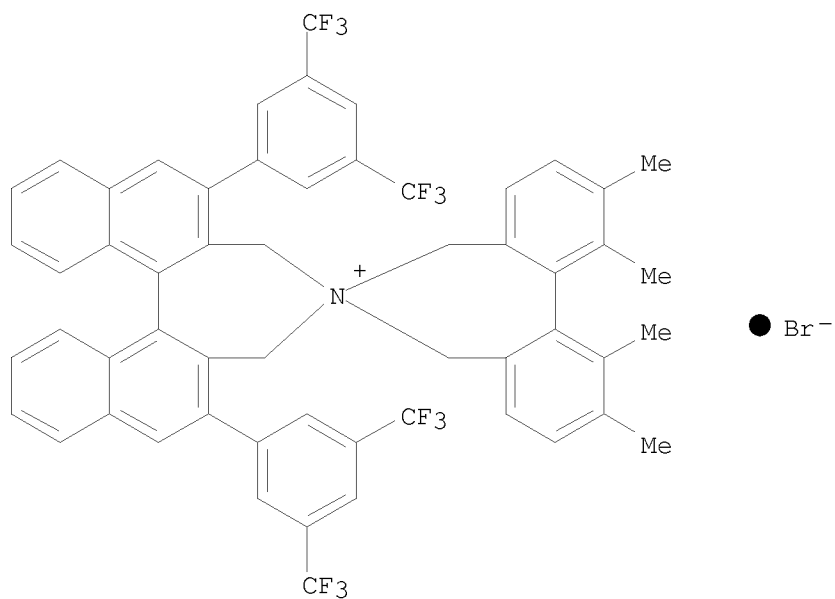
RN 909293-52-3 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-1,2,10,11-tetramethyl-4,8-bis(3,4,5-trifluorophenyl)-  
, bromide, (11aR,11'bR)- (9CI) (CA INDEX NAME)



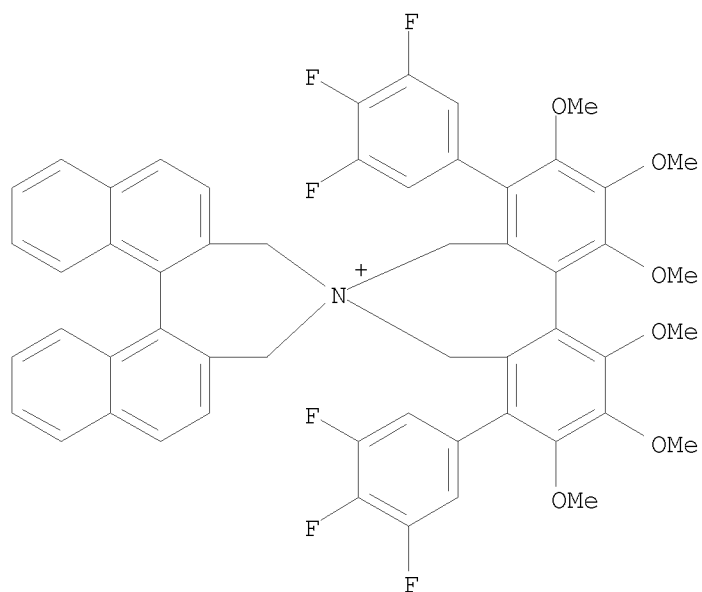
RN 909293-53-4 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
2',6'-bis[3,5-bis(trifluoromethyl)phenyl]-3',5,5',7-tetrahydro-1,2,10,11-  
tetramethyl-, bromide, (11aS,11'bS)- (9CI) (CA INDEX NAME)



RN 909293-54-5 CAPLUS  
 CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 3',5,5',7-tetrahydro-1,2,3,9,10,11-hexamethoxy-4,8-bis(3,4,5-  
 trifluorophenyl)-, bromide, (11aR,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A

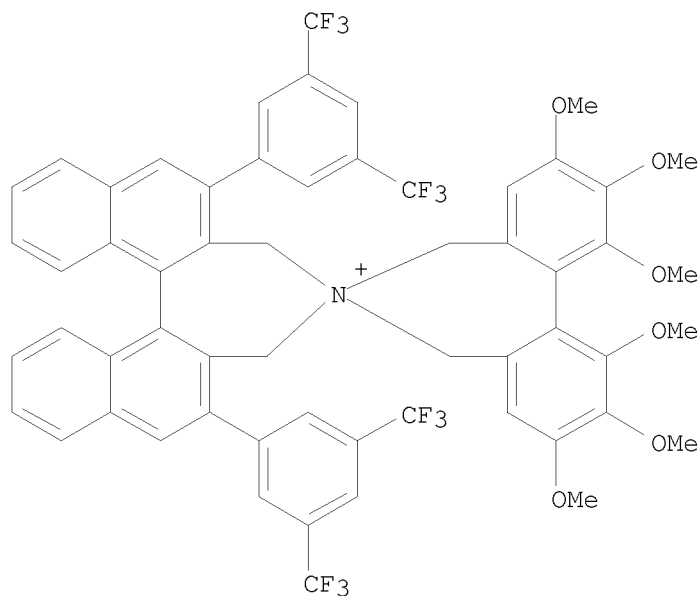


PAGE 2-A



RN 909293-55-6 CAPLUS  
 CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 2',6'-bis[3,5-bis(trifluoromethyl)phenyl]-3',5,5',7-tetrahydro-  
 1,2,3,9,10,11-hexamethoxy-, bromide, (11aR,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A



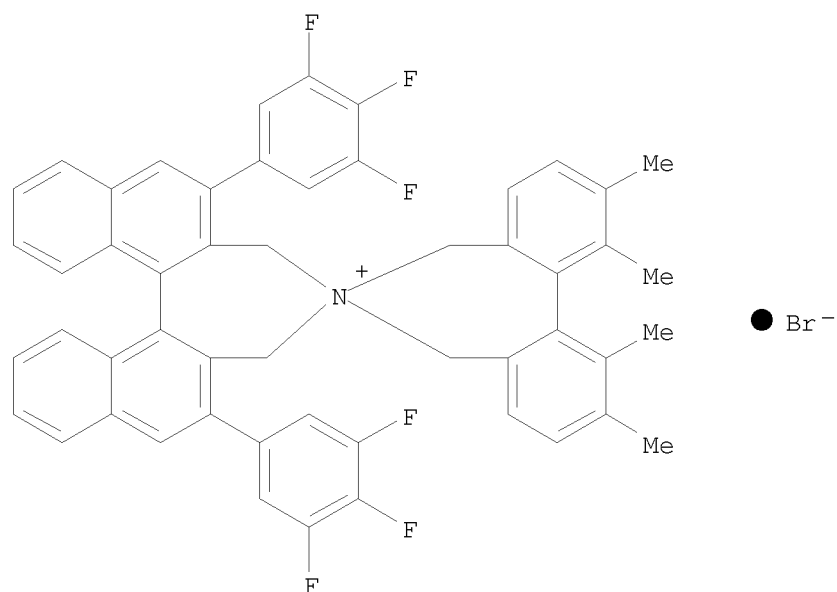
PAGE 2-A



RN 909293-68-1 CAPLUS  
 CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 3',5,5',7-tetrahydro-1,2,10,11-tetramethyl-2',6'-bis(3,4,5-  
 trifluorophenyl)-, bromide, (11aS,11'bR)- (9CI) (CA INDEX NAME)



10/587,467



OS.CITING REF COUNT:	1	THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)
REFERENCE COUNT:	37	THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 13 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2006:494055 CAPLUS

DOCUMENT NUMBER: 145:8461

TITLE: Process for producing amino acids and derivatives thereof with optically active quaternary ammonium salts having axial asymmetry

INVENTOR(S): Nishimoto, Yukifumi

PATENT ASSIGNEE(S): Nagase &amp; Co., Ltd., Japan

SOURCE: PCT Int. Appl., 175 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

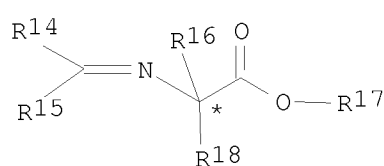
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006054366	A1	20060526	WO 2004-JP17676	20041122
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				

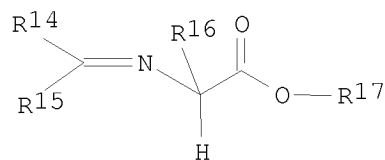
PRIORITY APPLN. INFO.: WO 2004-JP17676 20041122

OTHER SOURCE(S): MARPAT 145:8461

GI



I



II

AB Imines I [R14, R15 = H, (un)substituted aryl, excluding the case in which R14 and R15 are H at the same time; R16 = H, alkyl, alkenyl, etc.; R17 = alkyl; R18 = alkyl, alkenyl, alkynyl, etc.; the asterisk indicates an asym. center] are stereoselectively prepared by alkylation of II [R14 - R17 = same as defined above] in a mixture of a water-immiscible medium and an alkaline aqueous solution using an optically active quaternary ammonium salt (having axial asymmetry) as a phase-transfer catalyst. Optically active  $\alpha$ -amino acids are prepared from the above imines I. Thus, reaction of (S)-1,1'-binaphthyl-2,2'-dicarboxylic acid with iso-Pr bromide, followed by bromination using Br<sub>2</sub>, coupling reaction with 3,4,5-trifluorophenylboronic acid, reduction with LiAlH<sub>4</sub>, bromination using PBr<sub>3</sub>, and reaction with dibutylamine, gave the corresponding optically active quaternary ammonium salt having axial asymmetry for use as a

phase-transfer catalyst. Another optically active quaternary ammonium salt having axial asymmetry was prepared [in the same way as that described above] starting from (R)-1,1'-binaphthyl-2,2'-dicarboxylic acid; this optically active quaternary ammonium salt was used as the phase transfer catalyst in the following example : reaction of an imine (obtained by reaction of L-alanine Et ester HCl salt with p-chlorobenzaldehyde in the presence of Et3N) with p-chlorobenzyl bromide in a mixture of toluene and aqueous KOH solution in the presence of the above-mentioned phase transfer catalyst, followed by hydrolysis of the product by 1 N HCl and workup, gave (S)- $\alpha$ -methyl-4-chlorophenylalanine Et ester (93% ee).

IT 851942-89-7P 887938-70-7P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

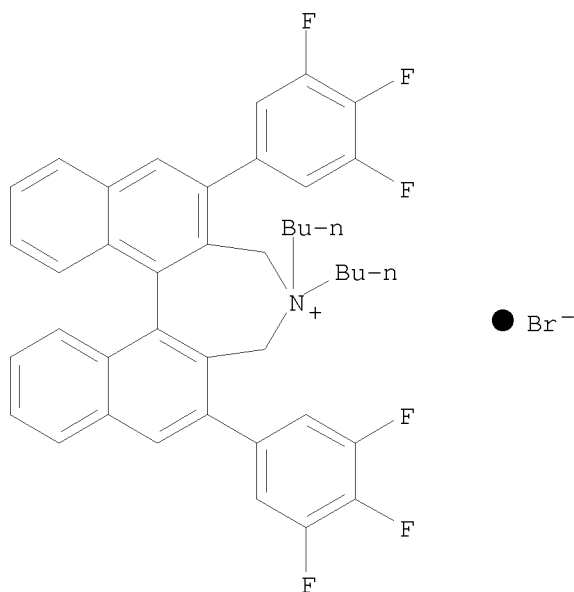
(preparation of amino acids via reaction of alanine derivs. with aldehydes, followed by alkylation of imines in organic solvent and alkaline aqueous

solution

using optically active quaternary ammonium salt as phase-transfer catalyst, and hydrolysis of imines)

RN 851942-89-7 CAPLUS

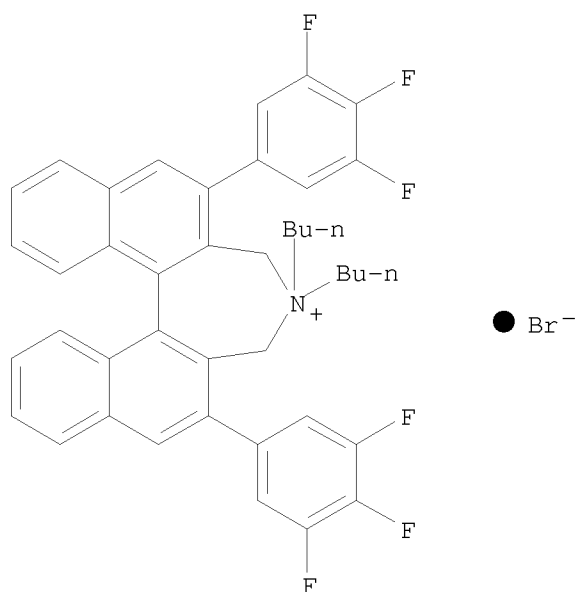
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)



RN 887938-70-7 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bR)- (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT: 1

THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD  
(1 CITINGS)

REFERENCE COUNT: 4

THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 14 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:1122413 CAPLUS

DOCUMENT NUMBER: 144:51242

TITLE: N-spiro chiral quaternary ammonium bromide catalyzed diastereo- and enantioselective conjugate addition of nitroalkanes to cyclic  $\alpha,\beta$ -unsaturated ketones under phase-transfer conditions

AUTHOR(S): Ooi, Takashi; Takada, Saki; Fujioka, Shingo; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, Sakyo, 606-8502, Japan

SOURCE: Organic Letters (2005), 7(23), 5143-5146

CODEN: ORLEF7; ISSN: 1523-7060

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 144:51242

AB Conjugate addition of various prochiral nitroalkanes to cyclic  $\alpha,\beta$ -unsatd. ketones was efficiently catalyzed by N-spiro C2-sym. chiral quaternary ammonium bromide possessing a 3,5-bis(3,4,5-trifluorophenyl)phenyl substituent, under solid-liquid phase-transfer conditions to afford  $\gamma$ -nitro ketones in excellent chemical yields with unprecedented levels of diastereo- and enantiocontrol.

IT 871130-09-5

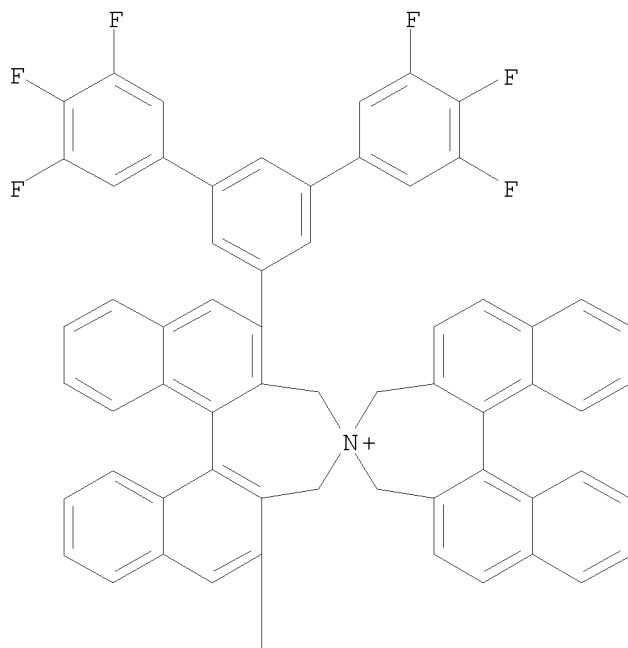
RL: CAT (Catalyst use); USES (Uses)

(N-spiro chiral quaternary ammonium bromide-catalyzed stereoselective conjugate addition of nitroalkanes to cyclic  $\alpha,\beta$ -unsatd. ketones under phase transfer conditions)

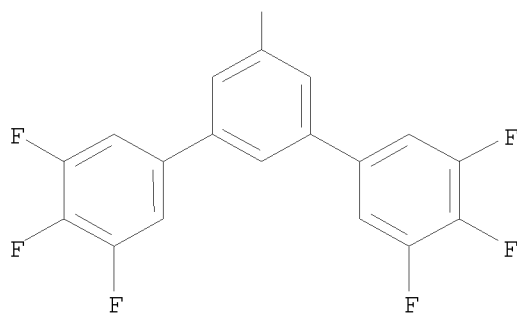
RN 871130-09-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,3'',4,4'',5,5''-hexafluoro[1,1':3',1''-terphenyl]-5'-yl)-  
3,3',5,5'-tetrahydro-, bromide, (11bS,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



OS.CITING REF COUNT:	17	THERE ARE 17 CAPLUS RECORDS THAT CITE THIS RECORD (17 CITINGS)
REFERENCE COUNT:	29	THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 15 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:1048699 CAPLUS

DOCUMENT NUMBER: 143:346808

TITLE: Preparation of optically-active 3-nitroalkylmalonate esters

INVENTOR(S): Maruoka, Keiji; Oi, Takashi

PATENT ASSIGNEE(S): Nagase &amp; Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 39 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
JP 2005263664	A	20050929	JP 2004-76692	20040317
PRIORITY APPLN. INFO.:			JP 2004-76692	20040317
OTHER SOURCE(S):	MARPAT	143:346808		

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Optically-active O2NCHR1CHR2CH(CO2R3)(CO2R4) (R1, R2 = H, C1-8 alkyl optionally substituted with C1-8 alkoxy, (hetero)aryl, (hetero)aralkyl, optionally substituted with C1-4 alkyl, cyano, halo, amino, etc.; R3, R4 = H, C1-6 alkyl, aryl, aralkyl optionally substituted with C1-4 alkyl or C1-5 alkoxy), useful as intermediates for optically-active amino acids, are prepared by reacting R1CH2NO2 (R1 = same as above) with R2CH:C(CO2R3)(CO2R4) with R2N:CHCO2R3 (R2-R4 = same as above) in solvents containing inorg. bases in the presence of optically-active cyclic quaternary ammonium salts I [R5, R6 = C1-8 (halo)alkyl, C2-8 (halo)alkenyl, C2-8 (halo)alkynyl, (hetero)aryl, (hetero)aralkyl, optionally substituted with C1-4 (halo)alkyl, cyano, amino, etc.; Y, Z = H, monovalent organic group or Y and Z are bonded together to form divalent organic group; X = halo]. Thus, a mixture of PrNO3, PhCH:C(CO2CHMe2)2, a catalyst II (preparation given), and Cs2CO3 was vigorously stirred at 0° for 6 h to give 99% optically-active O2NCHEtCHPhCH(CO2CHMe2)2 (anti/syn ratio = 86:14).

IT 501934-20-9P

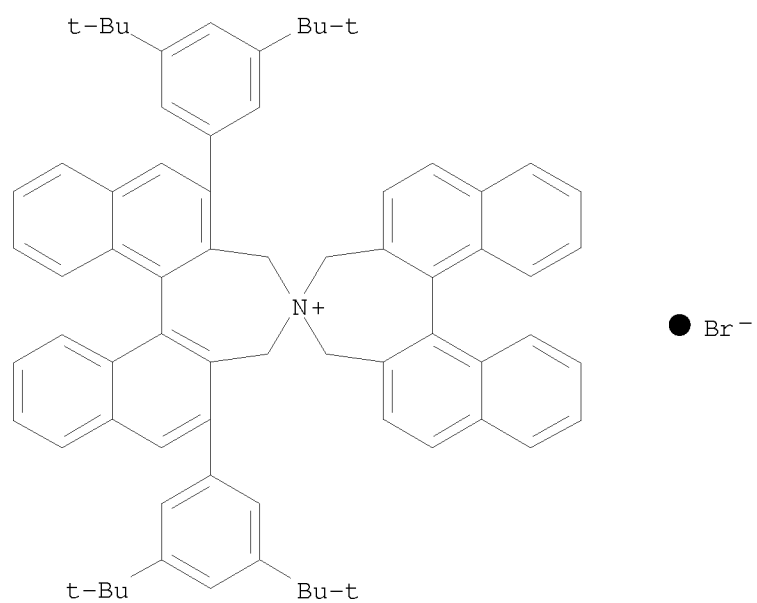
RL: CAT (Catalyst use); IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of optically-active 3-nitroalkylmalonate esters from nitro compds. and ylidenemalonates using optically-active cyclic quaternary ammonium salts as catalysts)

RN 501934-20-9 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide  
(1:1), (11bS,11'bs)- (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD  
(1 CITINGS)



L29 ANSWER 16 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:1023434 CAPLUS

DOCUMENT NUMBER: 143:326628

TITLE: Preparation of optically-active 3-aminoaspartic acid derivatives by reacting Schiff bases of glycinate with  $\alpha$ -imino esters using optically-active quaternary ammonium salts

INVENTOR(S): Maruoka, Keiji; Oi, Takashi

PATENT ASSIGNEE(S): Nagase &amp; Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 47 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

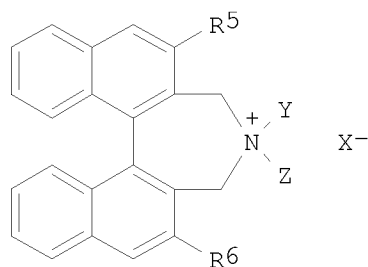
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
JP 2005255610	A	20050922	JP 2004-68812	20040311
PRIORITY APPLN. INFO.:			JP 2004-68812	20040311
OTHER SOURCE(S):	MARPAT	143:326628		

GI



AB Optically-active  $R1OCOCH(NH_2)CH(NHR_2)CO_2R_3$  ( $R_1$ - $R_3$  = H, C1-8 alkyl optionally substituted with C1-8 alkoxy, (hetero)aryl, (hetero)aralkyl, optionally substituted with C1-4 alkyl, cyano, halo, amino, etc.), useful as chiral catalysts, precursors for antitumor or antibiotic streptolidine lactam, etc., are prepared by reacting  $Ph_2C:NCCH_2CO_2R_1$  ( $R_1$  = same as above) with  $R_2N:CHCO_2R_3$  ( $R_2$ ,  $R_3$  = same as above) in the presence of optically-active quaternary ammonium salts I [ $R_5$ ,  $R_6$  = C1-8 (halo)alkyl, C2-8 (halo)alkenyl, C2-8 (halo)alkynyl, (hetero)aryl, (hetero)aralkyl, optionally substituted with C1-4 (halo)alkyl, cyano, amino, etc.; Y, Z = H, monovalent organic group or Y and Z are bonded together to form divalent organic group; X = halo]. Thus, p-MeOC<sub>6</sub>H<sub>4</sub>N:CHCO<sub>2</sub>Et was added dropwise to a mixture of mesitylene, an aqueous NaOH solution,  $Ph_2C:NCH_2CO_2CMe_3$ , and a catalyst

II at -20° and the reaction mixture was vigorously stirred at -20° for 6 h to give 88% diastereomeric mixture of (2S,3S)-1-tert-Bu 4-Et 3-N-(4-methoxyphenyl)aminoaspartate (syn/anti = 4.5:1). This was further processed to give a precursor of antitumor or antibiotic streptolidine lactam.

IT 515137-97-0 736974-91-7

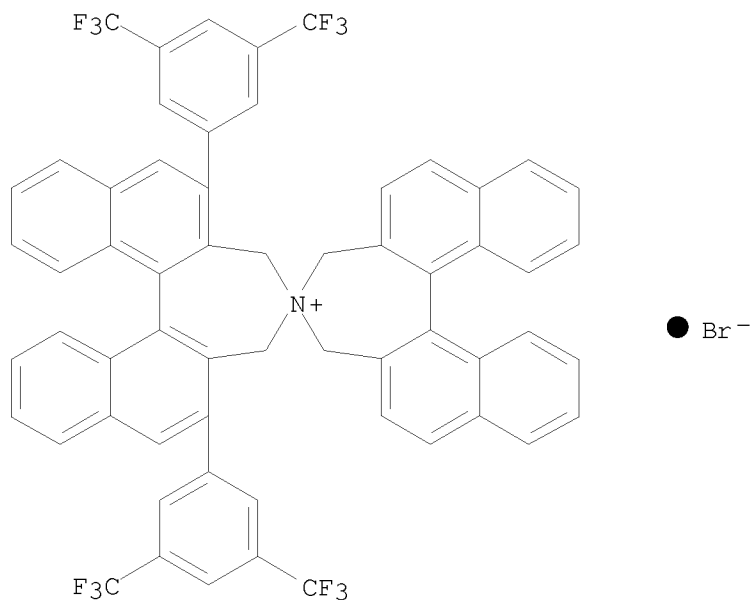
10/587,467

RL: CAT (Catalyst use); USES (Uses)

(preparation of optically-active 3-aminoaspartic acid derivs. by reacting Schiff bases of glycinates with  $\alpha$ -imino esters using optically-active quaternary ammonium salts)

RN 515137-97-0 CAPLUS

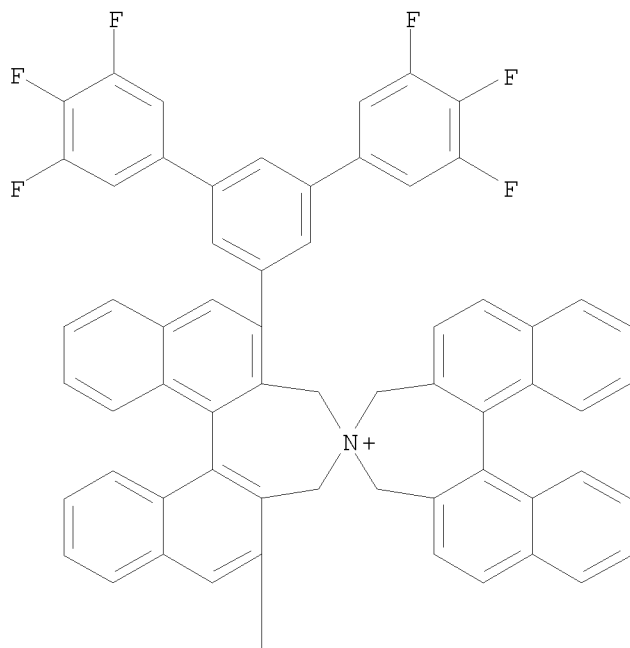
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide  
(1:1), (11bR,11'bR)- (CA INDEX NAME)



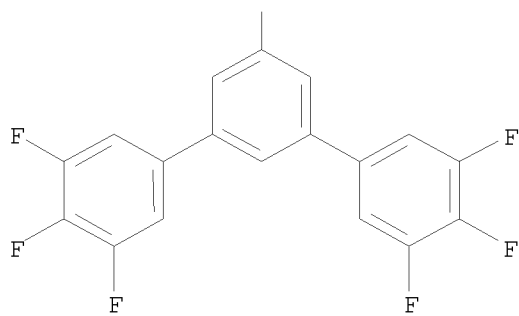
RN 736974-91-7 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,3'',4,4'',5,5''-hexafluoro[1,1':3',1''-terphenyl]-5'-yl)-  
3,3',5,5'-tetrahydro-, bromide, (11bR,11'bR)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



L29 ANSWER 17 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:960134 CAPLUS

DOCUMENT NUMBER: 143:248660

TITLE: Preparation of Schiff bases of substituted amino acid amides and optically-active vicinal diamines by hydrolysis and reduction of the Schiff bases

INVENTOR(S): Maruoka, Keiji; Oi, Takashi

PATENT ASSIGNEE(S): Nagase &amp; Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 50 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
JP 2005232103	A	20050902	JP 2004-44771	20040220
PRIORITY APPLN. INFO.:			JP 2004-44771	20040220
OTHER SOURCE(S):	MARPAT 143:248660			
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB R4R5C:NCR3R6CONHCHR1R2 [I; R1, R2 = H, C1-4 (halo)alkyl, C1-3 (halo)alkoxy, (halo)aryl; R3 = H, C1-8 (halo)alkyl, C2-8 (halo)alkenyl, C2-8 (halo)alkynyl, (hetero)aralkyl optionally substituted with halo, C1-4 (halo)alkyl, etc.; if R3 = H, then R4 = aryl optionally substituted with C1-4 (halo)alkyl, C1-3 (halo)alkyl, or halo; if R3 ≠ H, then R4 = H; R5 = C1-4 (halo)alkyl, C1-3 (halo)alkoxy, (halo)aryl; R6 = C1-8 alkyl, C2-8 alkenyl, aralkyl optionally substituted with C1-4 alkyl] are prepared by reacting I (R1-R5 = same as above; R6 = H) with organic halides in the presence of phase-transfer catalysts, e.g. quaternary ammonium salts, e.g. Bu4NBr, N-spiro quaternary ammonium salts II [R7, R8 = H, C1-7 (halo)alkyl, C2-6 (halo)alkenyl, (un)substituted (hetero)aryl, N,N-di(C1-4 alkyl)carbamoyl, etc.; X = Cl, Br, I] or III [R7, R8, X = same as above; R11-R41 = H, C1-6 alkyl, halo, (un)substituted (hetero)aryl, carbamoyl, etc.]. Optically-active H2NCR3R6CH2NHCHR1R2 (R1, R2, R3, R6 = same as above), useful as intermediates for drugs, asym. catalyst ligands, chiral chiral auxiliaries, etc., are prepared by hydrolysis and reduction of the above Schiff bases. Thus, a mixture of Ph2C:NCH2CONHCHPh2 (preparation given), optically-active II [R7 = R8 = 3,5-bis(3,5-di-tert-butyl-phenyl)phenyl, X = Br], KOH, PhCH2Br, and toluene at 0° for 3 h to give 98% optically-active Ph2C:NCH(CH2Ph)CONHCHPh2 (92% e.e.), which was hydrolyzed with HCl for deprotection and reduced with LiAlH4 to give 96% optically-active H2NCH(CH2Ph)CH2NHCHPh2.

IT 501934-21-0

RL: CAT (Catalyst use); USES (Uses)

(α-alkylation of amino acid amide Schiff bases with organic halides and phase-transfer catalysts, and hydrolysis and reduction of the products to give optically-active vicinal diamines)

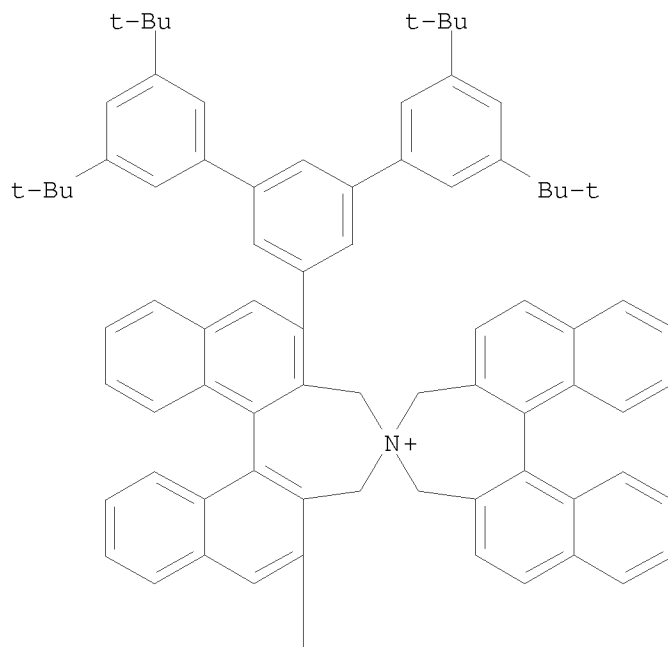
RN 501934-21-0 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-

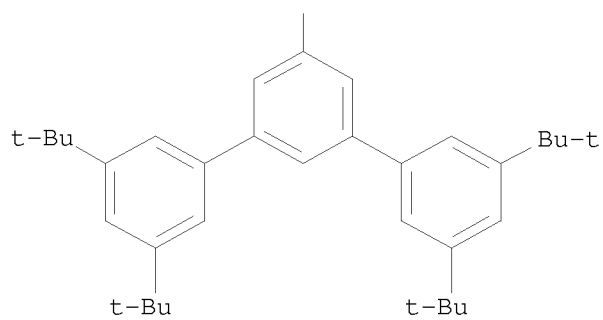
10/587,467

dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide (1:1),  
(11bS,11'bS)- (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



L29 ANSWER 18 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:888164 CAPLUS

DOCUMENT NUMBER: 143:229735

TITLE: Preparation of optically-active spiro quaternary ammonium salts, their intermediates, and their uses as catalysts for oxidation of  $\alpha,\beta$ -unsaturated ketones to epoxy compounds

INVENTOR(S): Maruoka, Keiji

PATENT ASSIGNEE(S): Nippon Soda Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.

CODEN: JKXXAF

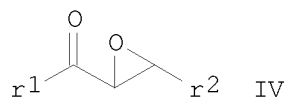
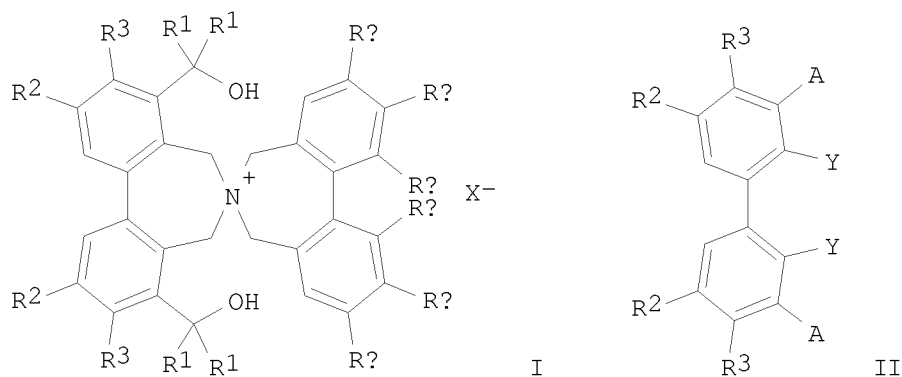
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
JP 2005225809	A	20050825	JP 2004-36294	20040213
PRIORITY APPLN. INFO.:			JP 2004-36294	20040213
OTHER SOURCE(S):	MARPAT	143:229735		
GI				



AB Claimed are the quaternary ammonium salts I [R1 = H, C1-8 alkyl, (un)substituted C6-14 aryl; R2, R3 = H, halo, (un)substituted C1-8 alkyl, (un)substituted C6-14 aryl, (un)substituted C3-8 heteroaryl, (un)substituted C1-8 alkoxy, (un)substituted C7-16 aralkyl; Ra = halo, (un)substituted C1-8 alkyl, (un)substituted C6-14 aryl, (un)substituted C1-8 alkoxy, (un)substituted C7-12 aralkyl; Rb = C1-8 alkyl, (un)substituted C6-14 aryl; Rc = H, C1-8 alkyl, (un)substituted C6-14 aryl, (un)substituted C1-8 alkoxy, (un)substituted C7-16 aralkyl; Ra and

Rc may be bonded together to form 5-6-membered ring optionally containing 1-2 O; X = anion, anionic group] and their intermediates, diesters II [R2, R3 = same as above; A = CO2R5; Y = (un)substituted methyl; R5 = H, C1-8 alkyl, (un)substituted C6-14 aryl], cyclic amino diesters II (A = CO2R5; R2, R3, R5 = same as above; YY = CH2R4CH2; R4 has no definition), and cyclic amine II (A = CR12OH; YY = CH2NR4CH2; R1, R2, R3 = same as above) (III). Epoxy compds. IV (r1, r2 = H, (un)substituted alkyl, (un)substituted aryl, (un)substituted aralkyl) are prepared by reacting r1COCH:CHr2 (r1, r2 = same as above) with oxidizing agents in the presence of I. Thus, I (R1 = 3,5-diphenylphenyl; R2 = R3 = Rb = H, Ra and Rc were bonded to form a condensed benzene ring; X = OH), prepared from IV (R3 = R3 = R4 = H, R1 = 3,5-diphenylphenyl) (preparation given) and (S)-2,2'-bis(bromomethyl)-[1,1']binaphthalenyl, was treated with Me3CCOCH:CH(CH2)5Me in toluene at 0° for 0.5 h and further reacted with NaOCl at 0° for 2 h to give 80% epoxide.

IT 727712-98-3P

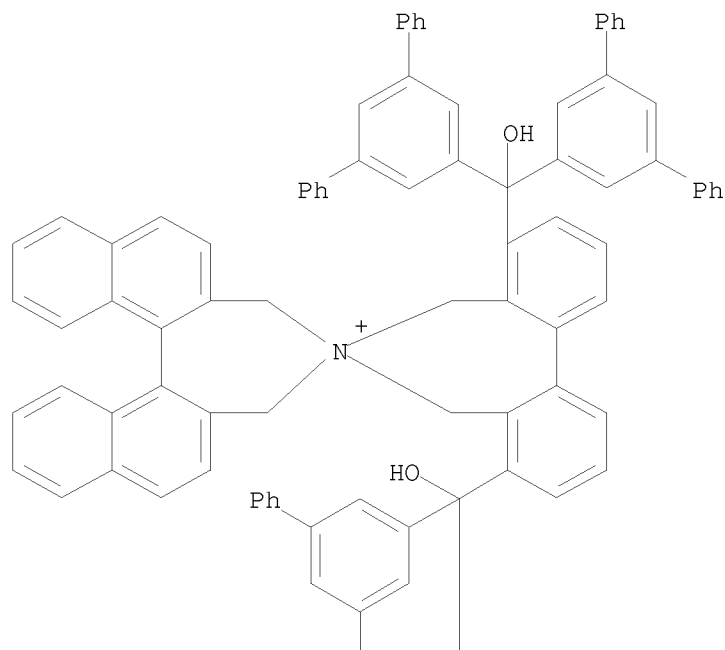
RL: CAT (Catalyst use); IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

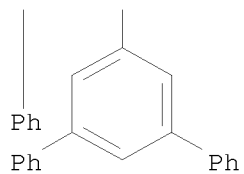
(preparation of optically-active spiro quaternary ammonium salts as catalysts for oxidation of  $\alpha,\beta$ -unsatd. ketones to epoxy compds.)

RN 727712-98-3 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium], 3',5,5',7-tetrahydro-4,8-bis[hydroxybis([1,1':3',1''-terphenyl]-5'-yl)methyl]-, bromide, (11aR,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A





OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD  
(1 CITINGS)



L29 ANSWER 19 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:732624 CAPLUS

DOCUMENT NUMBER: 143:212172

TITLE: Preparation of optically active 1,1'-binaphthyl  
 quaternary ammonium salts having axial asymmetry and  
 process for producing  $\alpha$ -amino acid and  
 derivative thereof with the quaternary ammonium salts

INVENTOR(S): Maruoka, Keiji

PATENT ASSIGNEE(S): Nagase &amp; Co., Ltd., Japan

SOURCE: PCT Int. Appl., 311 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005073196	A1	20050811	WO 2005-JP1623	20050127
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2549431	A1	20050811	CA 2005-2549431	20050127
EP 1712549	A1	20061018	EP 2005-704383	20050127
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
CN 1914177	A	20070214	CN 2005-80003716	20050127
SG 149879	A1	20090227	SG 2009-527	20050127
IN 2006KN01887	A	20070511	IN 2006-KN1887	20060706
US 20070161624	A1	20070712	US 2006-587467	20060724
US 20070135654	A1	20070614	US 2007-626228	20070123
PRIORITY APPLN. INFO.:			JP 2004-23317	A 20040130
			JP 2004-56659	A 20040301
			WO 2005-JP1623	W 20050127
			US 2006-587467	A1 20060724

OTHER SOURCE(S): MARPAT 143:212172

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Quaternary ammonium salts of the following formula (I) [R1-R6, R1'-R6' = H, NR2OR21 (wherein R = H, C1-4 alkyl), cyano, NO2, CONH2, mono- or di(C1-4 alkyl)carbamoyl, NHCOR9 (R9 = linear or branched C1-4 alkyl), each linear or branched or cyclic C1-6 alkyl, C2-6 alkenyl, or C2-6 alkynyl, each (un)substituted aralkyl, heteroaralkyl, aryl, or heteroaryl; R7, R8 = H, each linear or branched or cyclic C1-12 alkyl, C2-12 alkenyl, or C2-12

alkynyl, (un)substituted aryl, or heteroaryl, N-(un)substituted carbamoyloxyalkyl, carbamoylalkyl, or acylaminoalkyl, etc.; X- = halogen anions, SCN-, HSO4-, HF2-] are prepared by 1,1'-binaphthyl-2,2'-dimethylene bromide derivs. which can be produced through a relatively small number of steps with an easily available secondary amines. These compds. are useful as chiral phase-transfer catalysts.  $\alpha$ -Amino acids or derivs. of formula R14R15C:NC\*(R16)(R18)CO2R17 [R14, R15 = H, (un)substituted aryl; provided that R14 = R15  $\neq$  H; R16 = H, each linear or branched or cyclic C1-10 alkyl, C2-6 alkenyl, or C2-6 alkynyl, each (un)substituted aralkyl, heteroaralkyl, or heteroaryl; R17 = linear or branched or cyclic C1-8 alkyl; R18 = each linear or branched or cyclic C1-10 alkyl, C3-9 allyl or substituted C3-9 allyl, C2-6 alkenyl, or C2-6 alkynyl, each (un)substituted aralkyl, heteroaralkyl, aryl, heteroaryl, or aryl] are prepared by reaction of  $\alpha$ -amino acid derivs. of formula R14R15C:NC\*H(R16)CO2R17 (R14-R17 = same as above) with R18-W (R18 = same as above; W = functional group having leaving ability) in the presence of chiral quaternary ammonium salt I. Thus, a mixture of 280 mg (S)-2,2'-bis(bromomethyl)-3,3'-bis(3,4,5-trifluorophenyl)-1,1'-binaphthalene, 140  $\mu$ L dibutylamine, and 82 mg K2CO3 in 5 mL MeCN was stirred under refluxing for 10 h to give 83% quaternary ammonium salt (II). CsOH.H2O (5 equiv) was added to a mixture of 134 mg N-(p-chlorobenzylidene)-L-alanine tert-Bu ester, 1 mol% II, and 1.2 equiv benzyl bromide in 2 mL toluene at 0° and stirred at 0° for 3 h, followed by work up and treatment with a mixture of 0.5 M aqueous citric

acid

and THF at room temperature for 1 h, 82% amino acid derivative (III).

IT	708270-29-5P	851942-85-3P	851942-89-7P
	851942-91-1P	862248-84-8P	862248-85-9P
	862299-10-3P	862299-11-4P	862299-12-5P
	862299-13-6P	862299-14-7P	862299-15-8P
	862299-16-9P	862299-20-5P	862299-21-6P
	862299-22-7P	862299-23-8P	862299-24-9P
	862299-25-0P	862299-26-1P	862299-27-2P
	862299-28-3P	862299-29-4P	862299-30-7P
	862299-31-8P	862299-32-9P	862299-33-0P
	862299-34-1P	862299-35-2P	862299-36-3P
	862299-37-4P	862299-38-5P	862299-39-6P
	862299-40-9P	862299-71-6P	862299-72-7P
	862299-73-8P	862299-74-9P	862299-75-0P
	862299-76-1P	862299-77-2P	862299-78-3P
	862299-79-4P	862299-80-7P	862299-81-8P
	862299-82-9P	862299-83-0P	862299-84-1P
	862299-85-2P	862300-06-9P	862300-07-0P
	862300-08-1P	862300-09-2P	862300-10-5P
	862300-11-6P	862300-12-7P	862300-13-8P
	862300-14-9P	862300-15-0P	

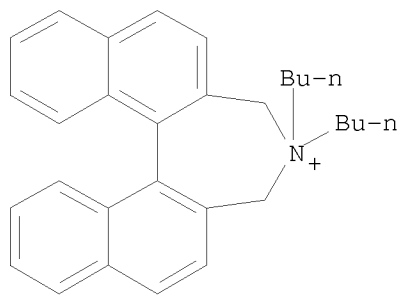
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of optically active 1,1'-binaphthyl quaternary ammonium salts as chiral phase-transfer catalysts for preparation  $\alpha$ -amino acids and derivs. thereof by asym. alkylation of amino acid derivs.)

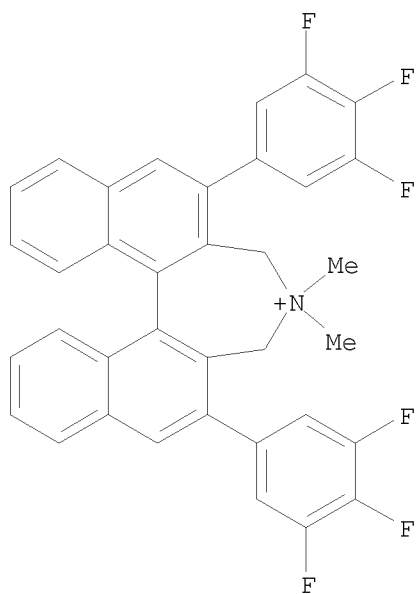
RN 708270-29-5 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,4-dibutyl-4,5-dihydro-, bromide (1:1) (CA INDEX NAME)

10/587,467

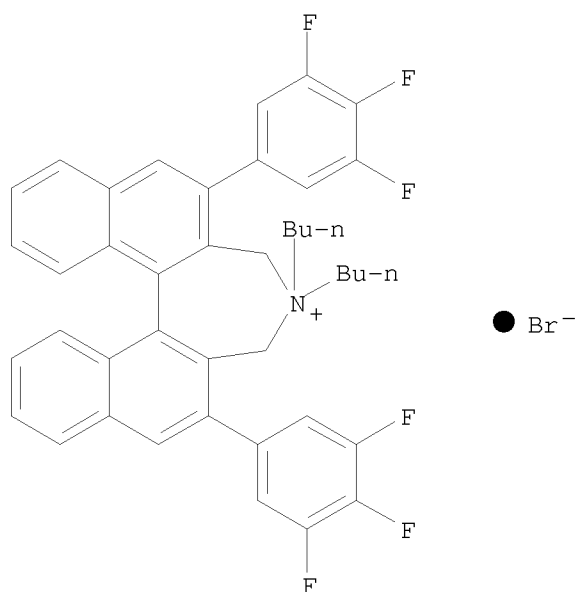


RN 851942-85-3 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-dimethyl-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1)  
(CA INDEX NAME)

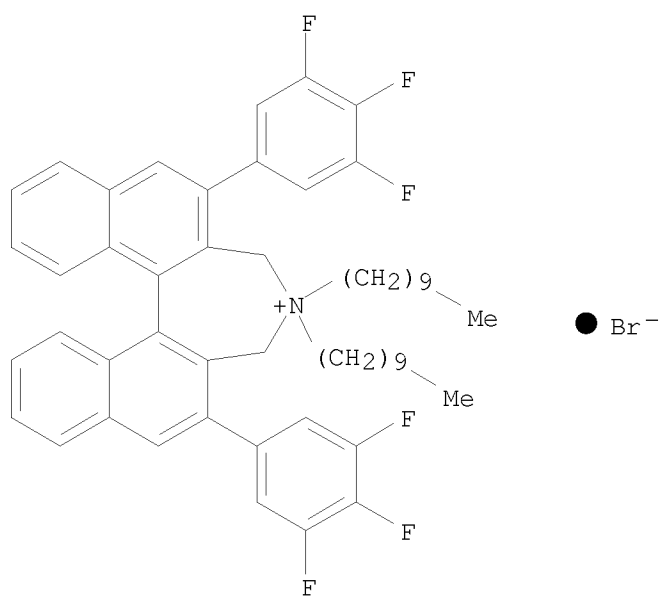


RN 851942-89-7 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)

10/587,467

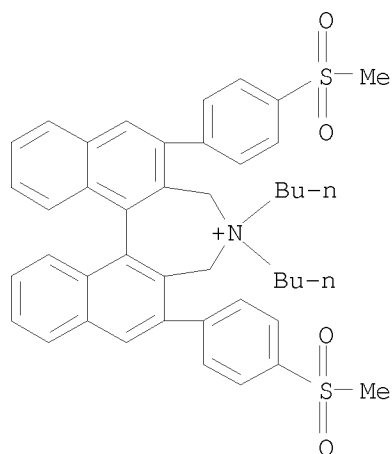


RN 851942-91-1 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-didecyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)

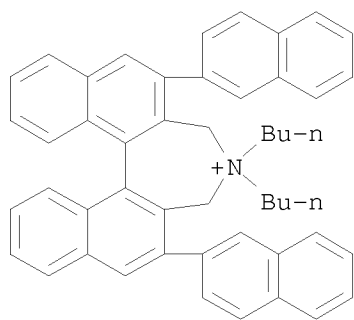


RN 862248-84-8 CAPLUS  
CN 7H-Dinaphth[2,1-c:1',2'-e]azepinium,  
8,8-dibutyl-8,9-dihydro-6,10-bis[4-(methylsulfonyl)phenyl]-, bromide (1:1)  
(CA INDEX NAME)

10/587,467

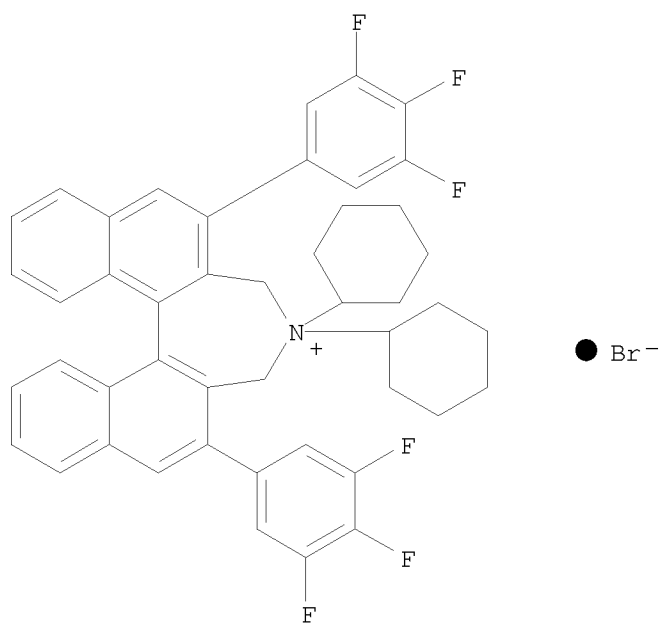


RN 862248-85-9 CAPLUS  
CN 7H-Dinaphth[2,1-c:1',2'-e]azepinium,  
8,8-dibutyl-8,9-dihydro-6,10-di-2-naphthalenyl-, bromide (1:1) (CA INDEX  
NAME)

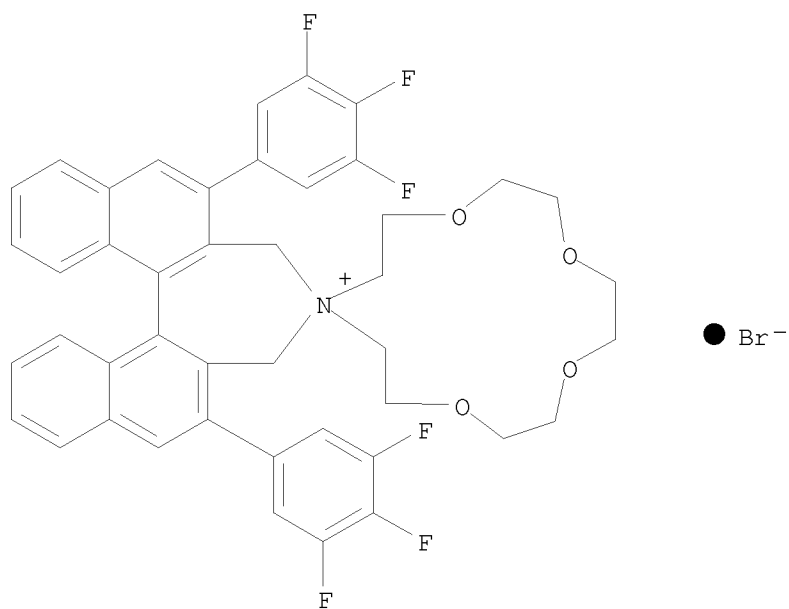


RN 862299-10-3 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dicyclohexyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide,  
(11bR)- (9CI) (CA INDEX NAME)

10/587,467



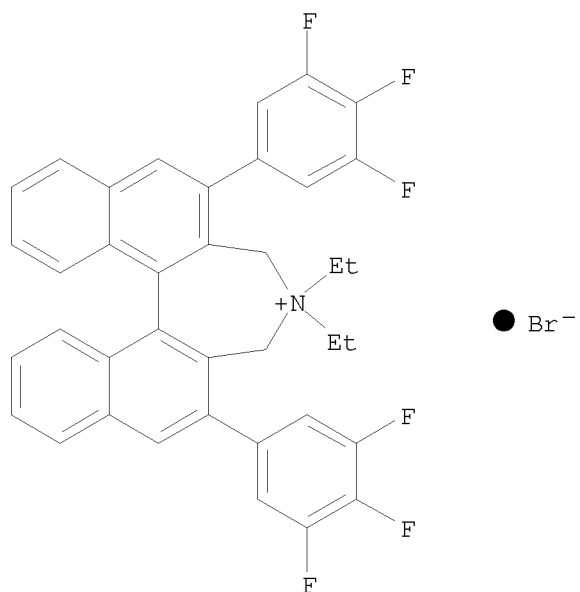
RN 862299-11-4 CAPLUS  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepinium-4,13'-  
[1,4,7,10]tetraoxa[13]azoniacyclopentadecane],  
3,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide, (11bR)- (9CI) (CA  
INDEX NAME)



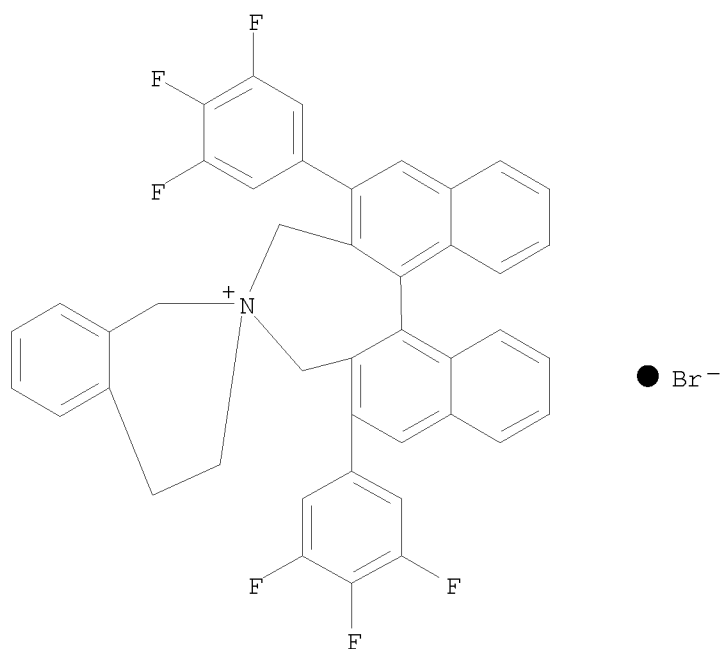
RN 862299-12-5 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,

10/587,467

4,4-diethyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide, (11bR)-  
(9CI) (CA INDEX NAME)



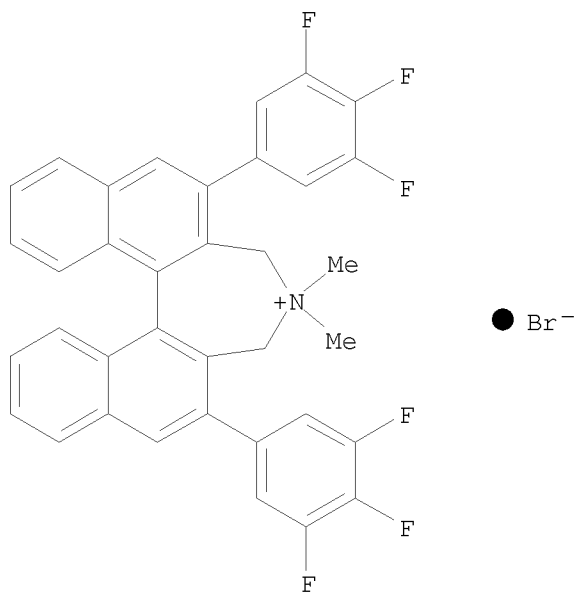
RN 862299-13-6 CAPLUS  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,2'(1'H)-isoquinolinium],  
3,3',4',5-tetrahydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide, (11bR)-  
(9CI) (CA INDEX NAME)



10/587,467

RN 862299-14-7 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-dimethyl-2,6-bis(3,4,5-trifluorophenyl)-, bromide, (11bR)-  
(9CI) (CA INDEX NAME)

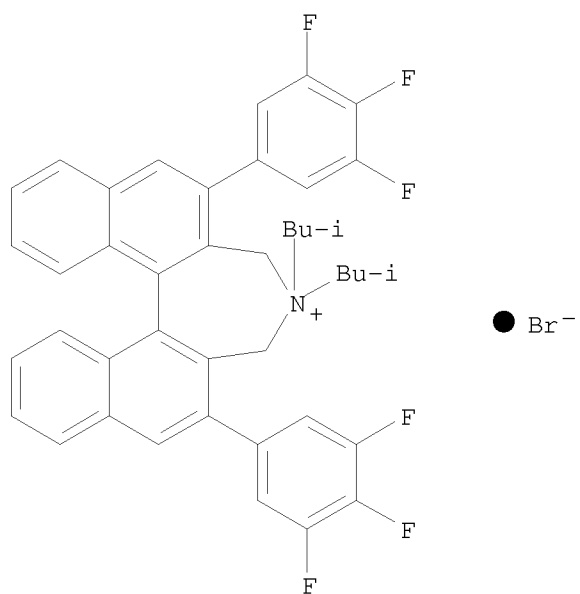


RN 862299-15-8 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-bis(2-methylpropyl)-2,6-bis(3,4,5-trifluorophenyl)-,  
bromide (1:1), (11bS)- (CA INDEX NAME)

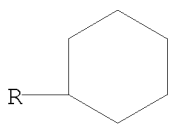
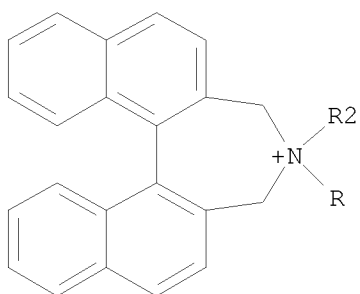


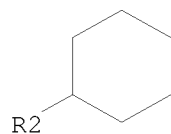
10/587,467



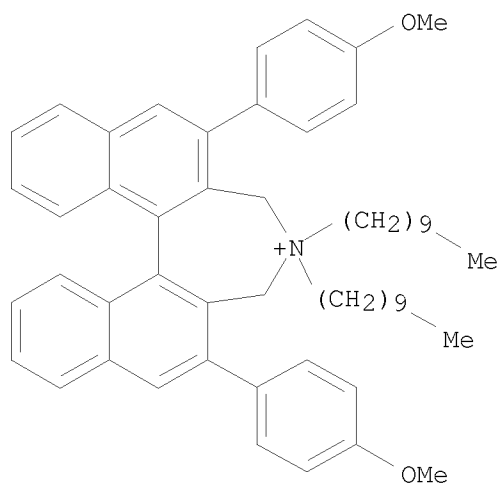
RN 862299-16-9 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,4-dicyclohexyl-4,5-dihydro-,  
bromide, (11bR)- (9CI) (CA INDEX NAME)

PAGE 1-A



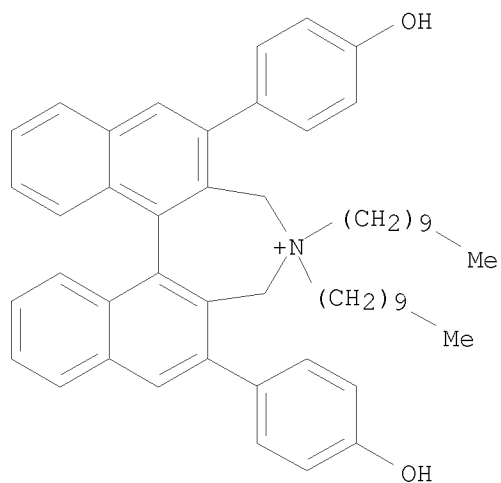


RN 862299-20-5 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4,4-didecyl-4,5-dihydro-2,6-bis(4-methoxyphenyl)-, bromide, (11bS)- (9CI)  
 (CA INDEX NAME)

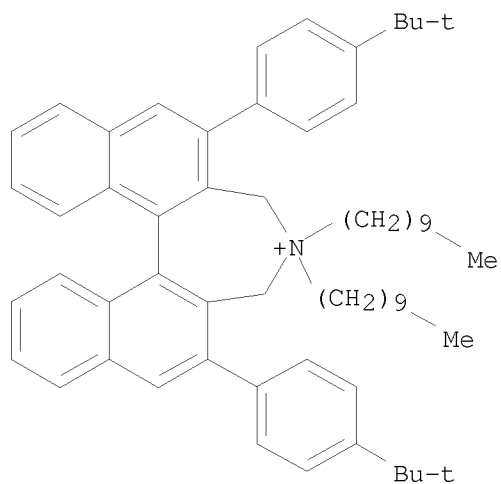


RN 862299-21-6 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4,4-didecyl-4,5-dihydro-2,6-bis(4-hydroxyphenyl)-, bromide, (11bS)- (9CI)  
 (CA INDEX NAME)

10/587,467

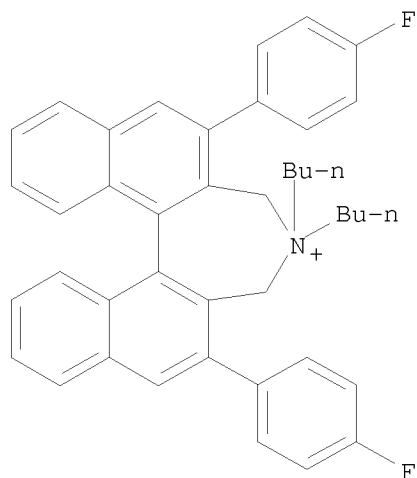


RN 862299-22-7 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-didecyl-2,6-bis[4-(1,1-dimethylethyl)phenyl]-4,5-dihydro-, bromide,  
(11bS)- (9CI) (CA INDEX NAME)

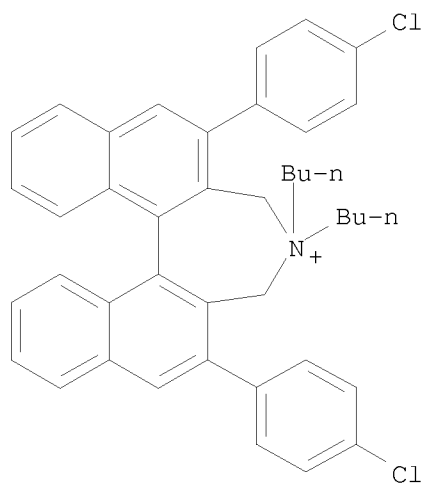


RN 862299-23-8 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(4-fluorophenyl)-4,5-dihydro-, bromide (1:1), (11bS)-  
(CA INDEX NAME)

10/587,467



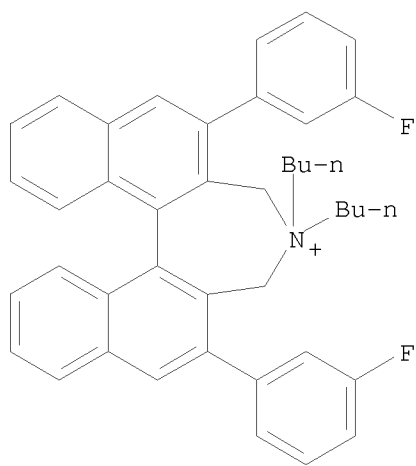
RN 862299-24-9 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(4-chlorophenyl)-4,5-dihydro-, bromide (1:1), (11bS)-  
(CA INDEX NAME)



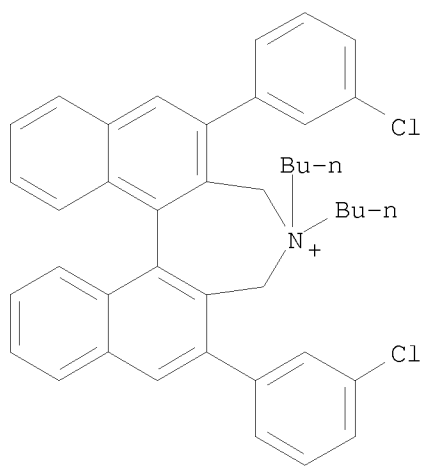
RN 862299-25-0 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(3-fluorophenyl)-4,5-dihydro-, bromide (1:1), (11bS)-

10/587,467

(CA INDEX NAME)



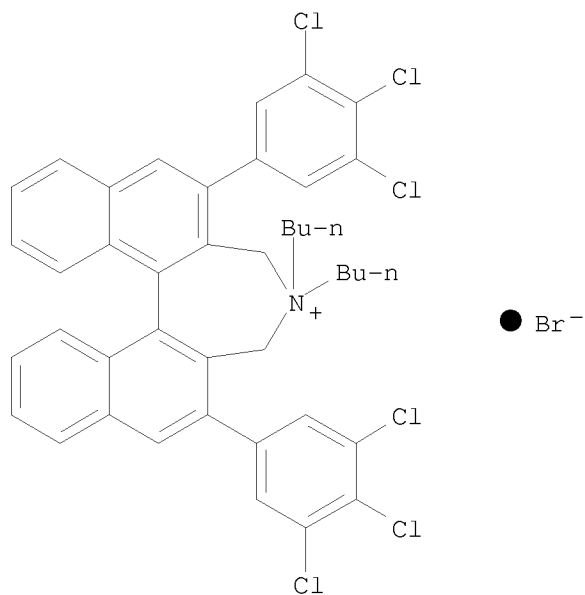
RN 862299-26-1 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(3-chlorophenyl)-4,5-dihydro-, bromide (1:1), (11bS)-  
(CA INDEX NAME)



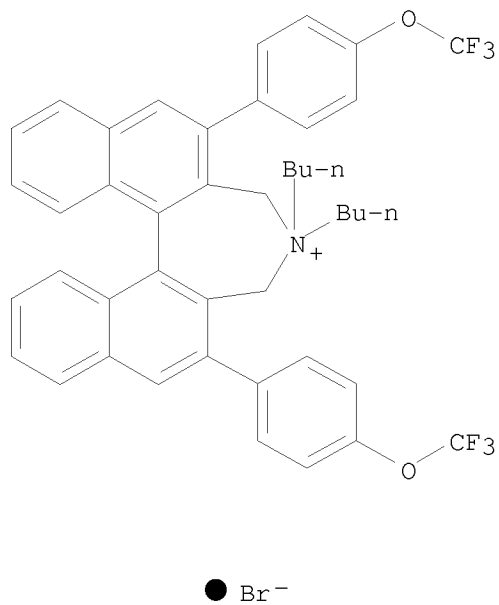
RN 862299-27-2 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,

10/587,467

4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trichlorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)



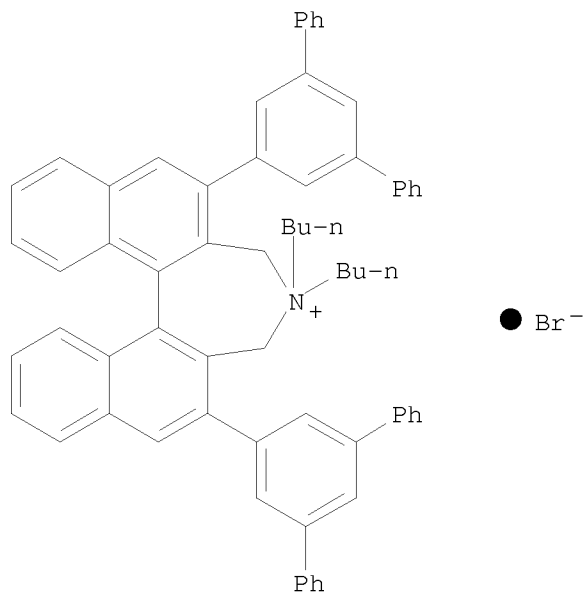
RN 862299-28-3 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis[4-(trifluoromethoxy)phenyl]-, bromide  
(1:1), (11bS)- (CA INDEX NAME)



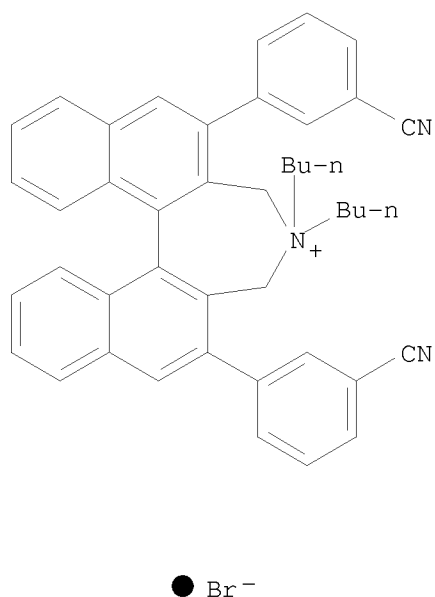
RN 862299-29-4 CAPLUS

10/587,467

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis([1,1':3',1''-terphenyl]-5'-yl)-, bromide  
(1:1), (11bS)- (CA INDEX NAME)

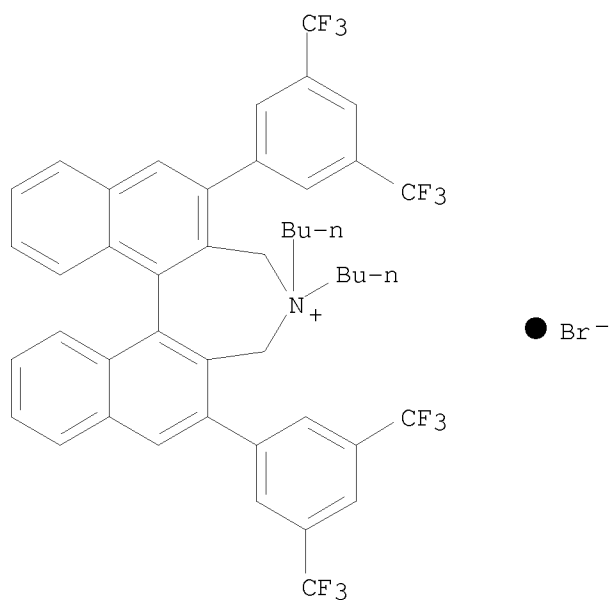


RN 862299-30-7 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(3-cyanophenyl)-4,5-dihydro-, bromide (1:1), (11bS)-  
(CA INDEX NAME)

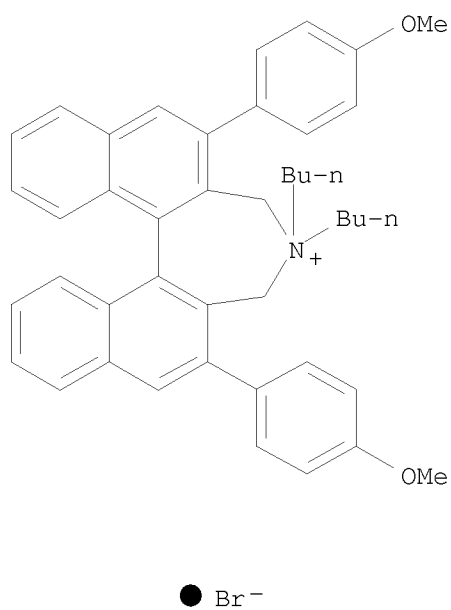


10/587,467

RN 862299-31-8 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-4,4-dibutyl-4,5-dihydro-, bromide  
(1:1), (11bS)- (CA INDEX NAME)



RN 862299-32-9 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 2,6-bis(m-aminophenyl)-, bromide  
(1:1), (11bS)- (CA INDEX NAME)

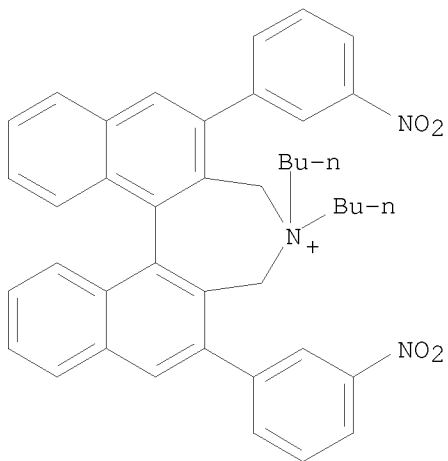




10/587,467

RN 862299-33-0 CAPLUS

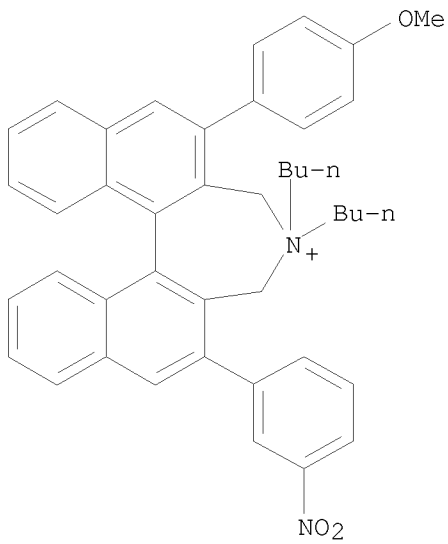
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3-nitrophenyl)-, bromide (1:1), (11bS)-  
(CA INDEX NAME)



● Br<sup>-</sup>

RN 862299-34-1 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2-(4-methoxyphenyl)-6-(3-nitrophenyl)-, bromide,  
(11bS)- (9CI) (CA INDEX NAME)

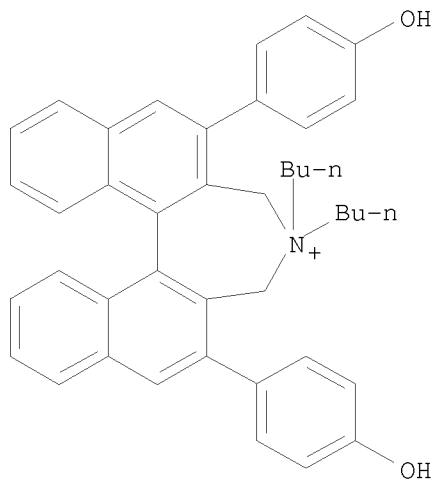


● Br<sup>-</sup>

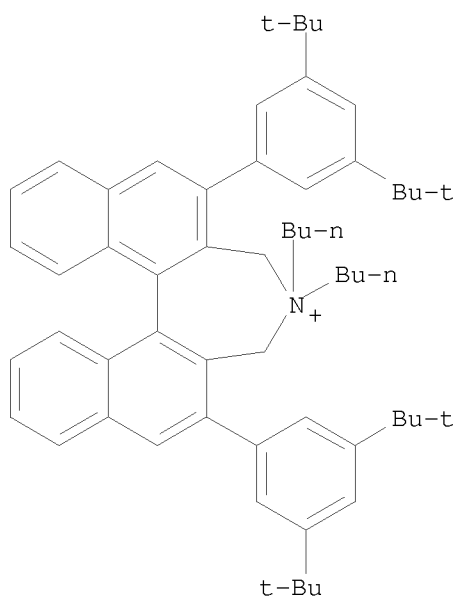
RN 862299-35-2 CAPLUS

10/587,467

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(4-hydroxyphenyl)-, bromide, (11bS)- (9CI)  
(CA INDEX NAME)



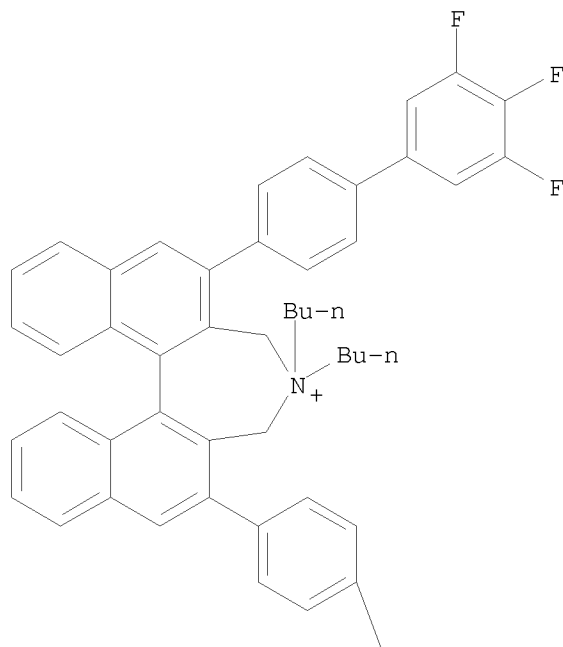
RN 862299-36-3 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-4,4-dibutyl-4,5-dihydro-,  
bromide (1:1), (11bS)- (CA INDEX NAME)



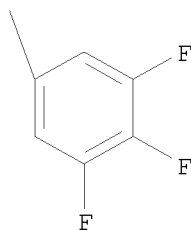
10/587,467

RN 862299-37-4 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3',4',5'-trifluoro[1,1'-biphenyl]-4-yl)-,  
bromide (1:1), (11bS)- (CA INDEX NAME)

PAGE 1-A

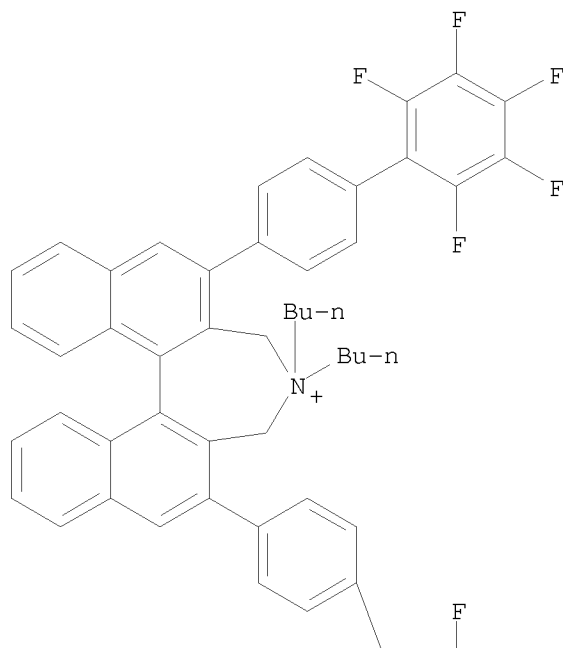


PAGE 2-A

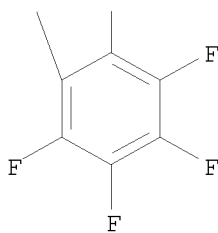


RN 862299-38-5 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(2',3',4',5',6'-pentafluoro[1,1'-biphenyl]-  
4-yl)-, bromide (1:1), (11bS)- (CA INDEX NAME)

PAGE 1-A

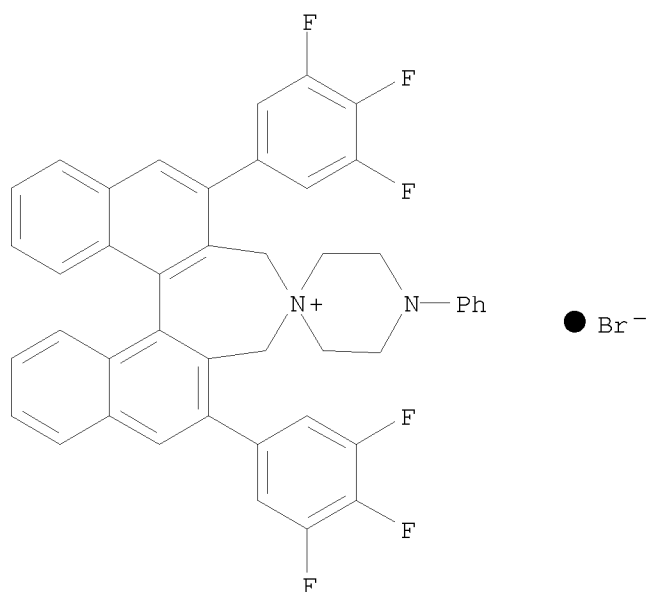


PAGE 2-A

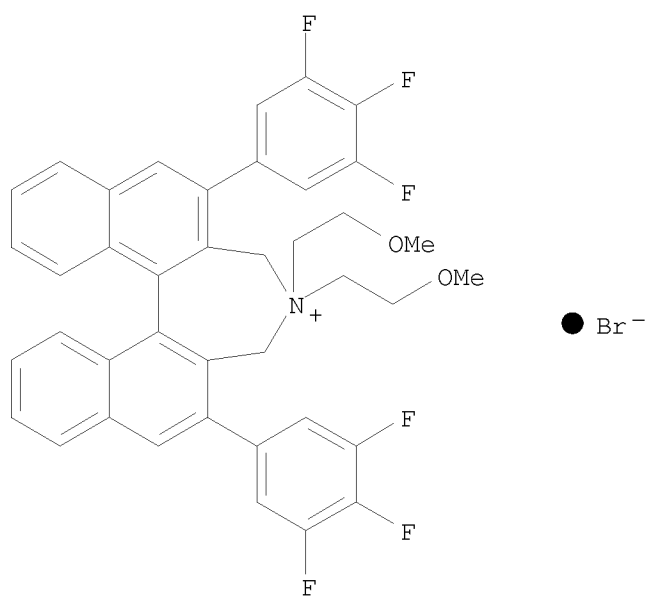


RN 862299-39-6 CAPLUS  
 CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperazinium],  
 3,5-dihydro-4'-phenyl-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
 (11bS)- (CA INDEX NAME)

10/587,467

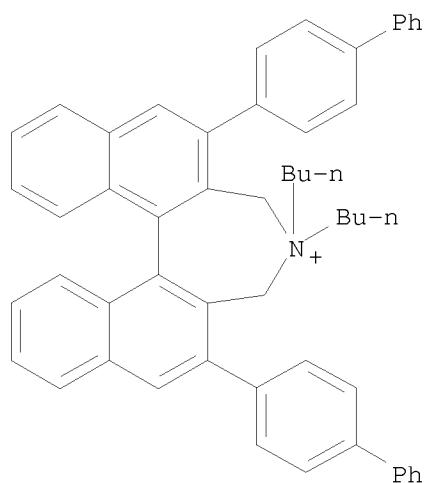


RN 862299-40-9 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-bis(2-methoxyethyl)-2,6-bis(3,4,5-trifluorophenyl)-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)

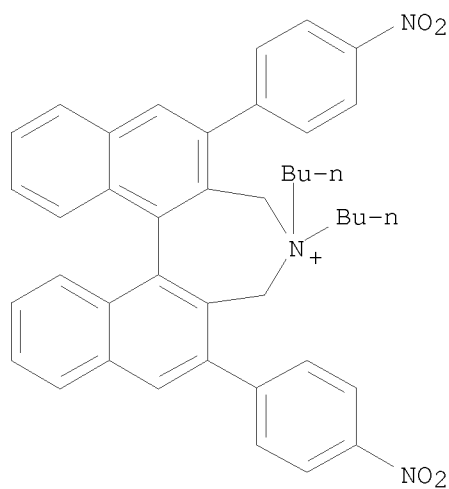


RN 862299-71-6 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
2,6-bis([1,1'-biphenyl]-4-yl)-4,4-dibutyl-4,5-dihydro-, bromide (1:1),  
(11bS)- (CA INDEX NAME)

10/587,467



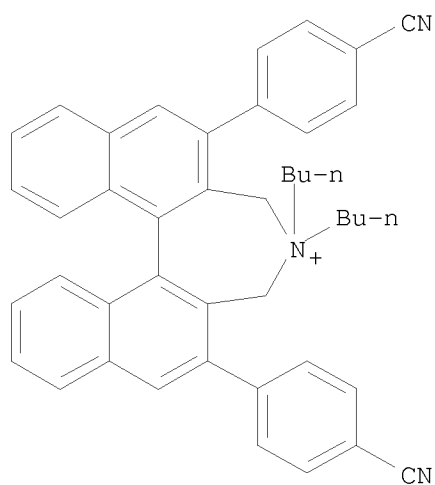
RN 862299-72-7 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(4-nitrophenyl)-, bromide (1:1), (11bS)-  
(CA INDEX NAME)



RN 862299-73-8 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(4-cyanophenyl)-4,5-dihydro-, bromide (1:1), (11bS)-

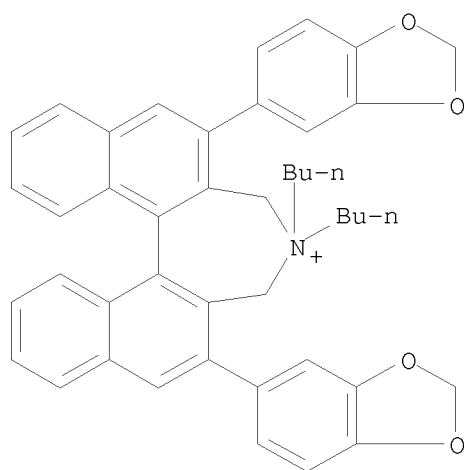
10/587,467

(CA INDEX NAME)



● Br<sup>-</sup>

RN 862299-74-9 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
2,6-bis(1,3-benzodioxol-5-yl)-4,4-dibutyl-4,5-dihydro-, bromide, (11bS)-  
(9CI) (CA INDEX NAME)

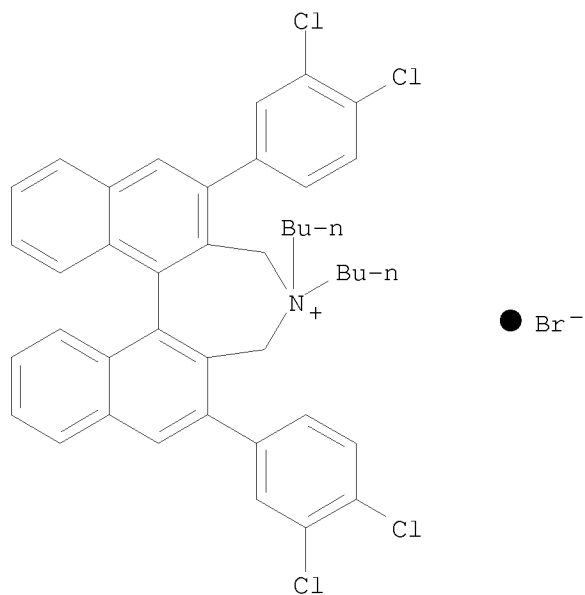


● Br<sup>-</sup>

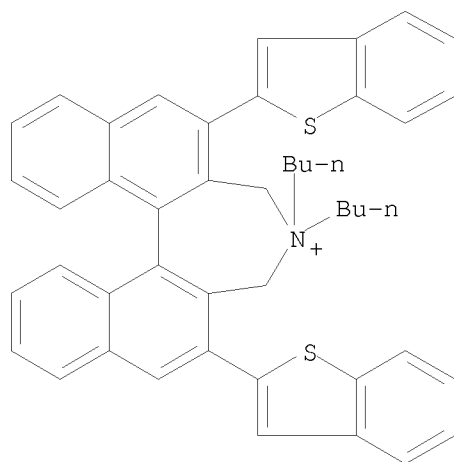
RN 862299-75-0 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,

10/587,467

4,4-dibutyl-2,6-bis(3,4-dichlorophenyl)-4,5-dihydro-, bromide (1:1),  
(11bS)- (CA INDEX NAME)



RN 862299-76-1 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
2,6-bis(benzo[b]thien-2-yl)-4,4-dibutyl-4,5-dihydro-, bromide, (11bS)-  
(9CI) (CA INDEX NAME)

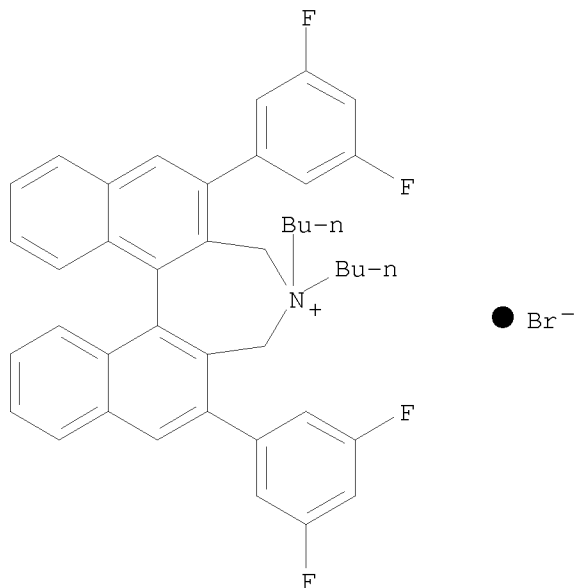


RN 862299-77-2 CAPLUS

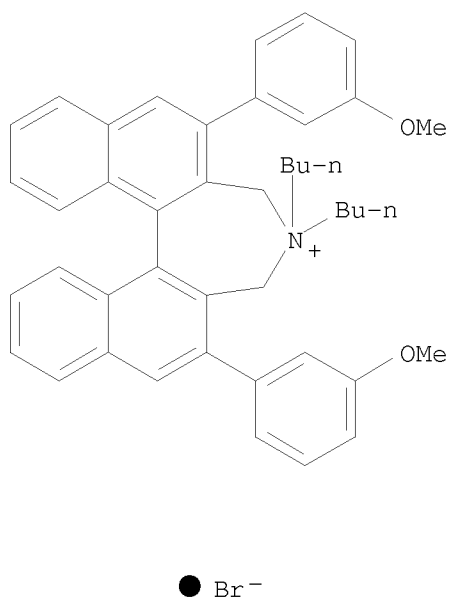


10/587,467

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(3,5-difluorophenyl)-4,5-dihydro-, bromide (1:1),  
(11bS)- (CA INDEX NAME)

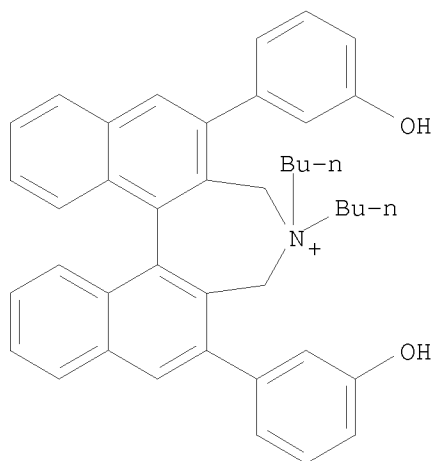


RN 862299-78-3 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3-methoxyphenyl)-, bromide (1:1), (11bS)-  
(CA INDEX NAME)



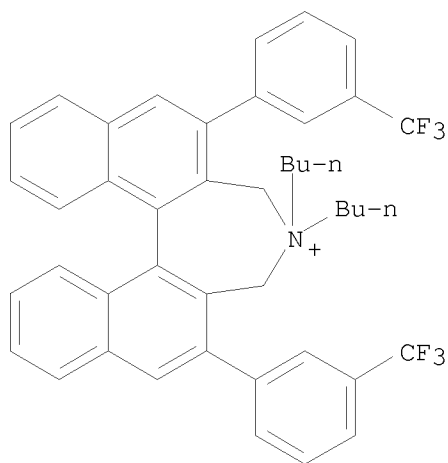
10/587,467

RN 862299-79-4 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3-hydroxyphenyl)-, bromide, (11bS)- (9CI)  
(CA INDEX NAME)



● Br<sup>-</sup>

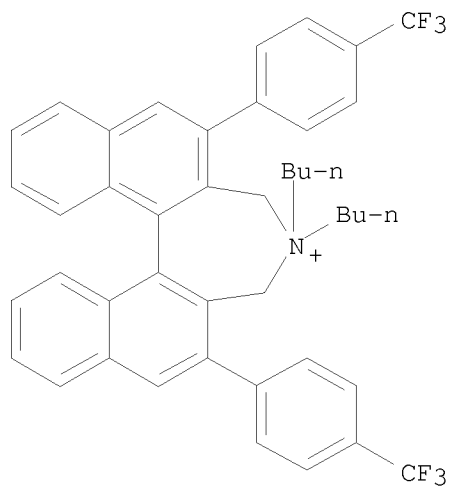
RN 862299-80-7 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis[3-(trifluoromethyl)phenyl]-, bromide  
(1:1), (11bS)- (CA INDEX NAME)



● Br<sup>-</sup>

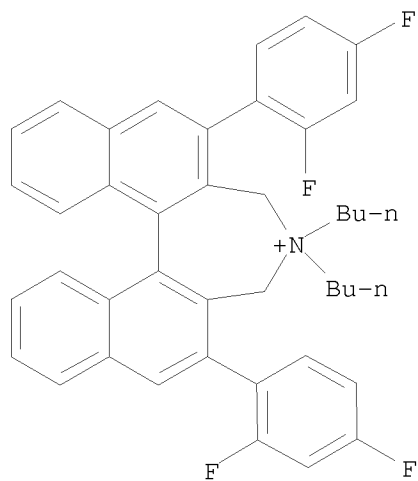
10/587,467

RN 862299-81-8 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis[4-(trifluoromethyl)phenyl]-, bromide  
(1:1), (11bS)- (CA INDEX NAME)



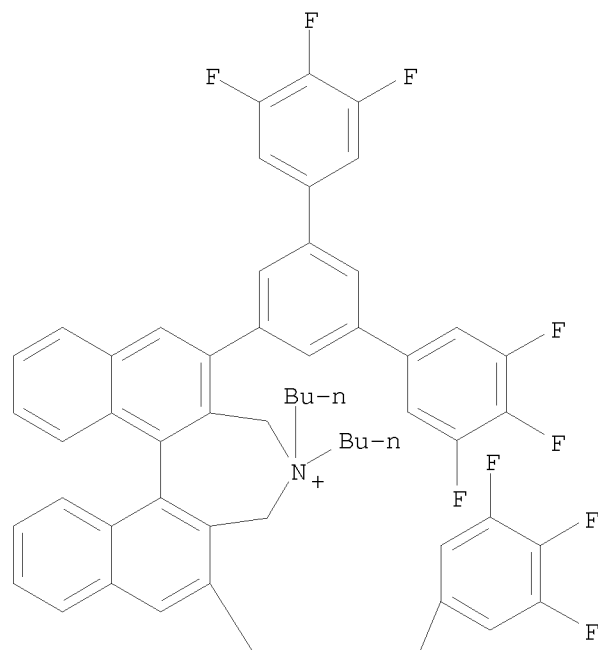
RN 862299-82-9 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(2,4-difluorophenyl)-4,5-dihydro-, bromide, (11bS)-  
(9CI) (CA INDEX NAME)

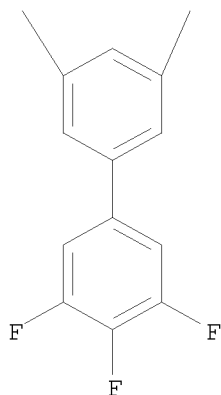
10/587,467



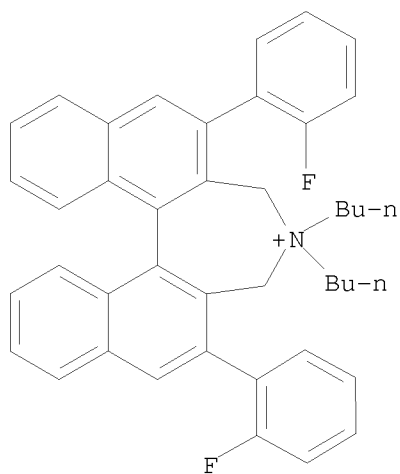
RN 862299-83-0 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(3,3'',4,4'',5,5'''-hexafluoro[1,1':3',1''-terphenyl]-5'-yl)-4,5-dihydro-, (11bS)- (9CI) (CA INDEX NAME)

PAGE 1-A



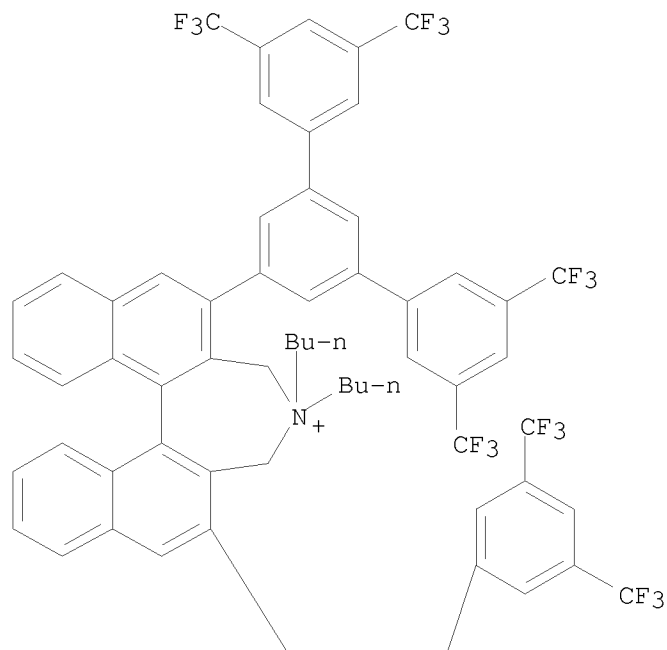


RN 862299-84-1 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4,4-dibutyl-2,6-bis(2-fluorophenyl)-4,5-dihydro-, bromide, (11bS)- (9CI)  
 (CA INDEX NAME)

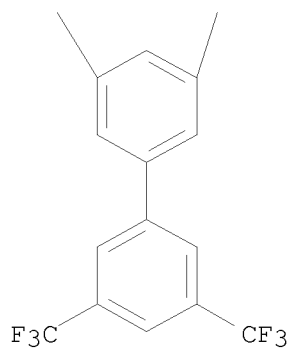


RN 862299-85-2 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4,4-dibutyl-4,5-dihydro-2,6-bis[3,3'',5,5''-  
 tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bS)- (9CI)  
 (CA INDEX NAME)

PAGE 1-A

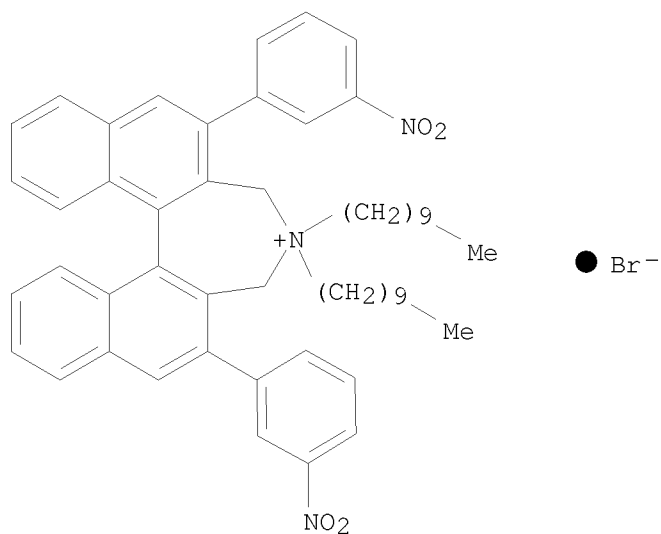


PAGE 2-A

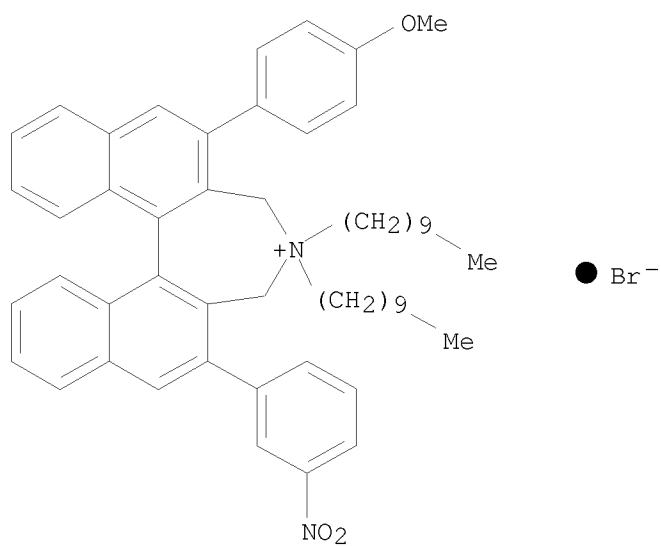


RN 862300-06-9 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4,4-didecyl-4,5-dihydro-2,6-bis(3-nitrophenyl)-, bromide, (11bS)- (9CI)  
 (CA INDEX NAME)

10/587,467

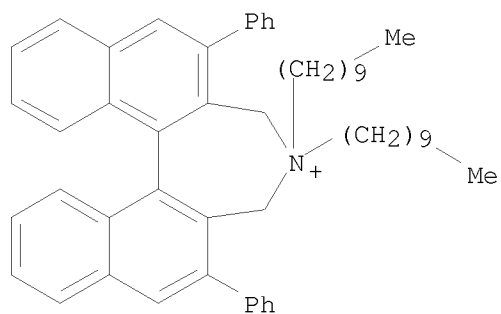


RN 862300-07-0 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-didecyl-4,5-dihydro-2-(4-methoxyphenyl)-6-(3-nitrophenyl)-, bromide,  
(11bS)- (9CI) (CA INDEX NAME)

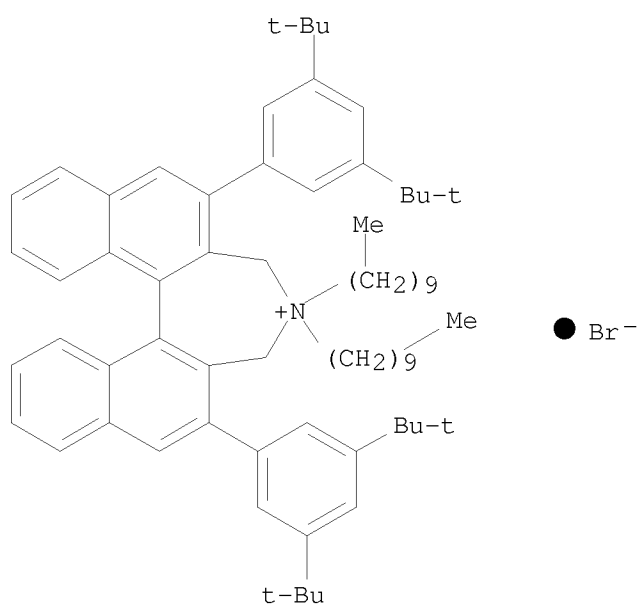


RN 862300-08-1 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-didecyl-4,5-dihydro-2,6-diphenyl-, bromide (1:1), (11bS)- (CA INDEX  
NAME)

10/587,467



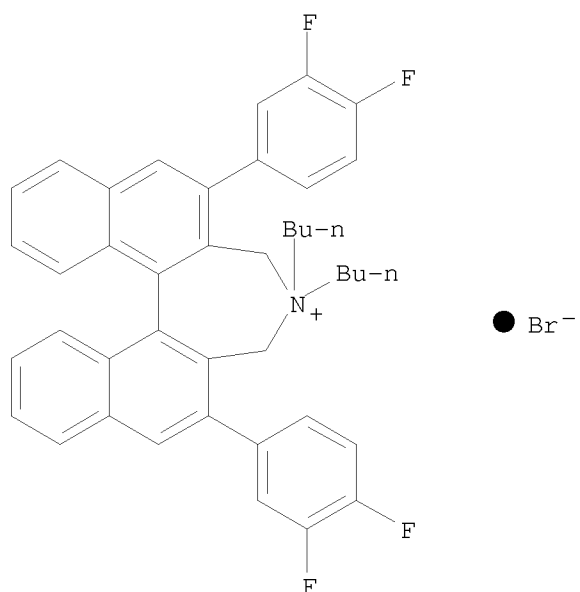
RN 862300-09-2 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-4,4-didecyl-4,5-dihydro-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)



RN 862300-10-5 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-2,6-bis(3,4-difluorophenyl)-4,5-dihydro-, bromide (1:1),  
(11bS)- (CA INDEX NAME)

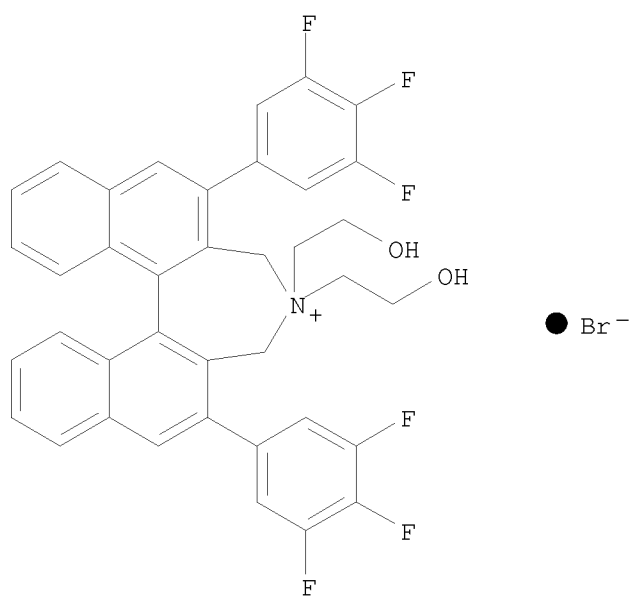


10/587,467



RN 862300-11-6 CAPLUS

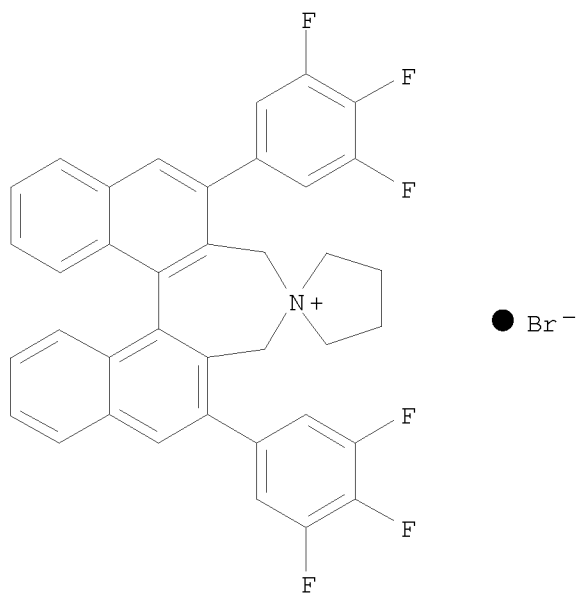
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-bis(2-hydroxyethyl)-2,6-bis(3,4,5-trifluorophenyl)-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)



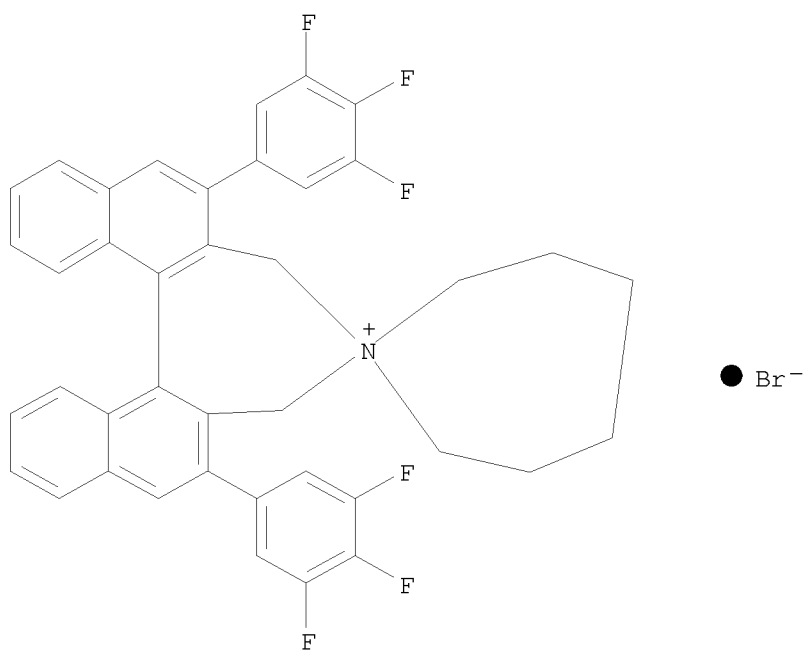
RN 862300-12-7 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-pyrrolidinium],  
3,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1), (11bS)- (CA  
INDEX NAME)

10/587,467



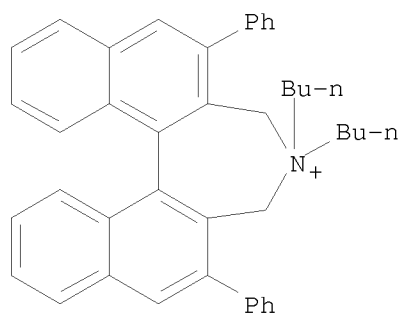
RN 862300-13-8 CAPLUS  
CN Spiro[1H-azepine-1,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
2,3,3',4,5,5',6,7-octahydro-2',6'-bis(3,4,5-trifluorophenyl)-, bromide,  
(11'bs)- (9CI) (CA INDEX NAME)



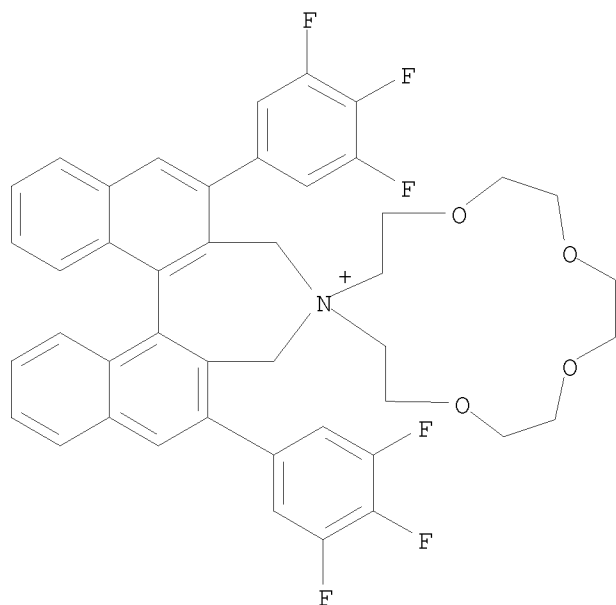
RN 862300-14-9 CAPLUS

10/587,467

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-diphenyl-, bromide (1:1), (11bS)- (CA INDEX  
NAME)



RN 862300-15-0 CAPLUS  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepinium-4,13'-  
[1,4,7,10]tetraoxa[13]azoniacyclopentadecane],  
3,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1), (11bS)- (CA  
INDEX NAME)



OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD  
(3 CITINGS)  
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

10/587,467

L29 ANSWER 20 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:556214 CAPLUS

DOCUMENT NUMBER: 143:229517

TITLE: Importance of Chiral Phase-Transfer Catalysts with Dual Functions in Obtaining High Enantioselectivity in the Michael Reaction of Malonates and Chalcone Derivatives

AUTHOR(S): Ooi, Takashi; Ohara, Daisuke; Fukumoto, Kazuhiro; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Sakyo, Kyoto, 606-8502, Japan

SOURCE: Organic Letters (2005), 7(15), 3195-3197

CODEN: ORLEF7; ISSN: 1523-7060

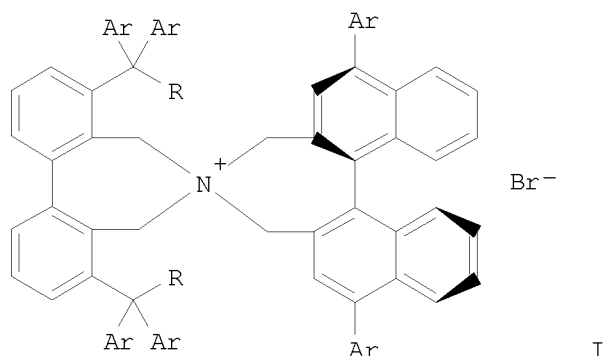
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 143:229517

GI



AB Highly enantioselective Michael addition of di-Et malonate to chalcone derivs. has been achieved under mild phase-transfer conditions by the successful utilization of an N-spiro C2-sym. chiral quaternary ammonium bromide as catalyst, which possesses diarylhydroxymethyl functionalities as a recognition site for the prochiral electrophile. The catalysts used in this study included ammonium bromides I (R = OH, H; Ar = 3,5-Ph<sub>2</sub>C<sub>6</sub>H<sub>3</sub>). This simple asym. Michael addition process was found to be quite effective for various chalcone derivs., including those with heteroarom. substituents.

IT 727712-99-4

RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(study of asym. Michael addition of malonate to chalcones under mild phase-transfer conditions using

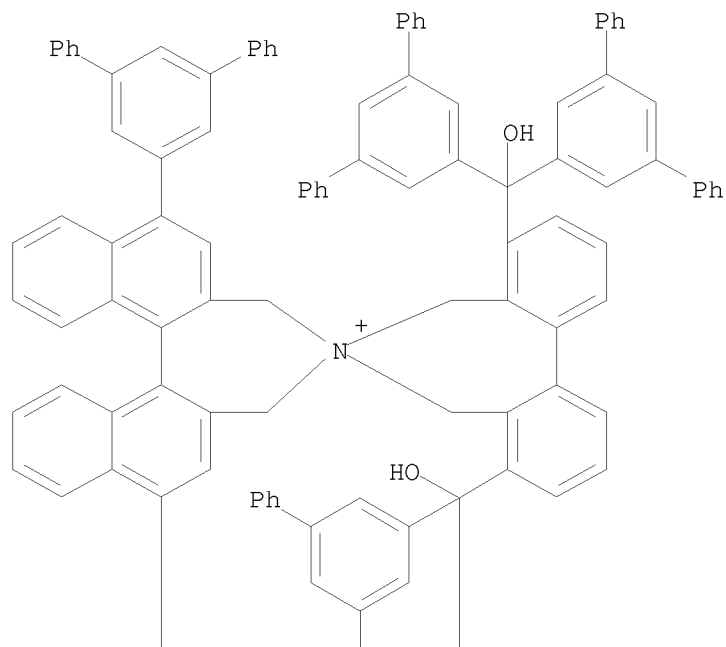
bis[(hydroxy)di(phenyl)methyl]spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium] bromide as catalyst)

RN 727712-99-4 CAPLUS

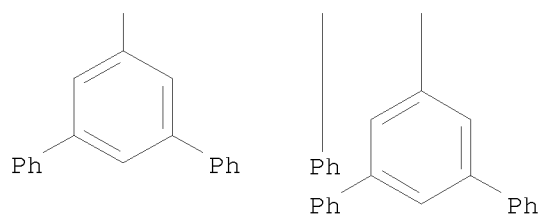
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium], 3',5,5',7-tetrahydro-4,8-bis[hydroxybis([1,1':3',1''-terphenyl]-5'-

yl)methyl]-1',7'-bis([1,1':3',1''-terphenyl]-5'-yl)-, bromide,  
(11aR,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

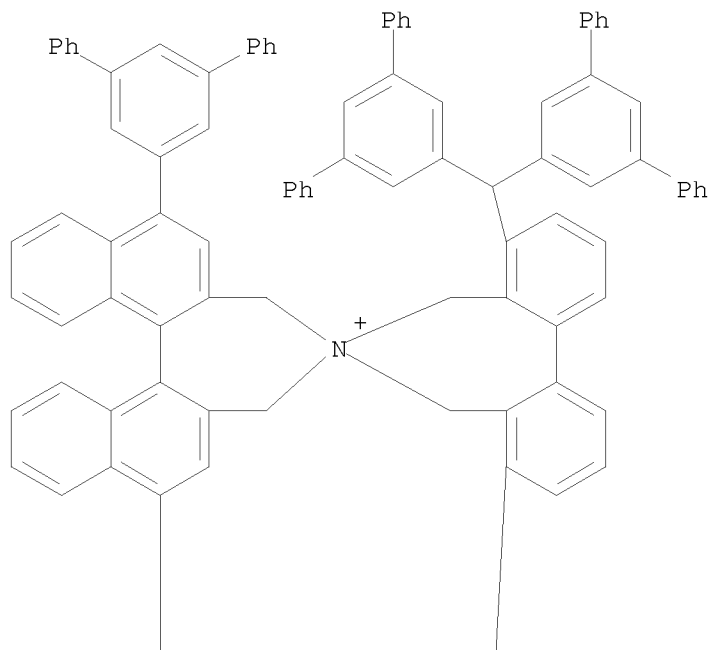


IT 863029-09-8P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
 USES (Uses)  
 (study of asym. Michael addition of malonate to chalcones under mild  
 phase-transfer conditions using  
 bis[di(aryl)methyl]spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-  
 c:1',2'-e]azepinium] bromide as catalyst)  
 RN 863029-09-8 CAPLUS  
 CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],

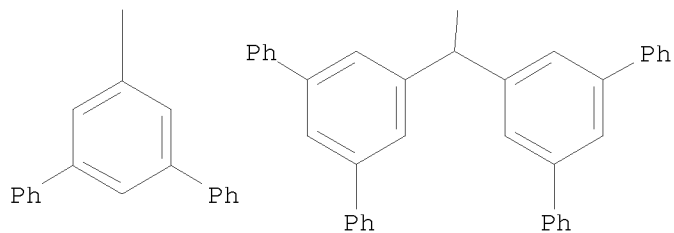
10/587,467

4,8-bis[bis([1,1':3',1''-terphenyl]-5'-yl)methyl]-3',5,5',7-tetrahydro-  
1',7'-bis([1,1':3',1''-terphenyl]-5'-yl)-, bromide, (11'bS)- (9CI) (CA  
INDEX NAME)

PAGE 1-A

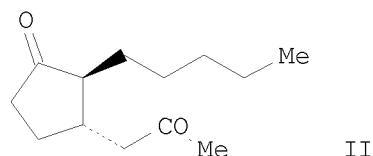


PAGE 2-A



OS.CITING REF COUNT:	39	THERE ARE 39 CAPLUS RECORDS THAT CITE THIS RECORD (39 CITINGS)
REFERENCE COUNT:	32	THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 21 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2005:412162 CAPLUS  
 DOCUMENT NUMBER: 144:6604  
 TITLE: Enantioselective synthesis of the fragrance  
 trans-magnolione under asymmetric phase transfer  
 catalysis  
 AUTHOR(S): Superchi, Stefano; Nardiello, Mariangela; Donnoli,  
 Maria Irene; Scafato, Patrizia; Menicagli, Rita;  
 Rosini, Carlo  
 CORPORATE SOURCE: Dipartimento di Chimica, Universita della Basilicata,  
 Potenza, 85100, Italy  
 SOURCE: Comptes Rendus Chimie (2005), 8(5), 867-874  
 CODEN: CRCOCR; ISSN: 1631-0748  
 PUBLISHER: Editions Scientifiques et Medicales Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 144:6604  
 GI



AB The stereoselective synthesis of the fragrance trans-magnolione via  
 conjugate Michael addition of alkyl acetoacetates to  
 2-pentyl-2-cyclopentenone (I) under solid/liquid phase transfer catalysis  
 (PTC) was reported. Under optimized conditions, the 1,4-addition of tert-Bu  
 acetoacetate to enone I catalyzed by N1-(9-anthracenylmethyl)quininium  
 chloride afforded, after hydrolysis and decarboxylation,  
 (2S,3S)-trans-magnolione (II) with 85/15 trans/cis d.r. and 74% ee. The  
 use of the pseudo-enantiomeric catalyst  
 N1-(9-anthracenylmethyl)quinidinium chloride gave (2R,3R)-trans-magnolione  
 with comparable enantio- and diastereoselectivity.

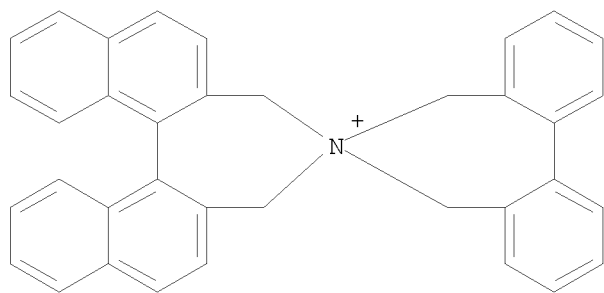
IT 452067-23-1P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
 USES (Uses)  
 (enantioselective synthesis of the fragrance trans-magnolione via  
 stereoselective Michael addition mediated by chiral phase transfer  
 catalysts)

RN 452067-23-1 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 3',5,5',7-tetrahydro-, bromide, (11'bs)- (CA INDEX NAME)



10/587,467



OS.CITING REF COUNT:	3	THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)
REFERENCE COUNT:	29	THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 22 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:241622 CAPLUS

DOCUMENT NUMBER: 142:463178

TITLE: Highly Enantioselective Phase-Transfer-Catalyzed Alkylation of Protected  $\alpha$ -Amino Acid Amides toward Practical Asymmetric Synthesis of Vicinal Diamines,  $\alpha$ -Amino Ketones, and  $\alpha$ -Amino Alcohols

AUTHOR(S): Ooi, Takashi; Takeuchi, Mifune; Kato, Daisuke; Uematsu, Yukitaka; Tayama, Eiji; Sakai, Daiki; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, Sakyo, 606-8502, Japan

SOURCE: Journal of the American Chemical Society (2005), 127(14), 5073-5083

CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 142:463178

AB Highly enantioselective  $\alpha$ -alkylation of protected glycine diphenylmethyl (Dpm) and Weinreb amides Ph<sub>2</sub>C:NCH<sub>2</sub>CONR<sub>1</sub>R<sub>2</sub> (R<sub>1</sub> = H, R<sub>2</sub> = Ph<sub>2</sub>CH; R<sub>1</sub> = Me, PhCH<sub>2</sub>, R<sub>2</sub> = MeO) has been realized under phase-transfer conditions by the successful utilization of binaphthalene-based designer chiral quaternary ammonium salt as a catalyst. Particularly, remarkable reactivity of the chiral ammonium enolate derived from this catalyst and Ph<sub>2</sub>C:NCH<sub>2</sub>CONR<sub>1</sub>R<sub>2</sub> (R<sub>1</sub> = H, R<sub>2</sub> = Ph<sub>2</sub>CH) allowed the reaction with less reactive simple secondary alkyl halides with high efficiency and enantioselectivity. An addnl. unique feature of this chiral ammonium enolate is its ability to recognize the chirality of  $\beta$ -branched primary alkyl halides, which provides impressive levels of kinetic resolution and double stereodifferentiation during the alkylation, allowing for two  $\alpha$ - and  $\gamma$ -stereocenters to be controlled. Combined with the subsequent reduction using LiAlH<sub>4</sub> in cyclopentyl Me ether, this system offers a facile access to structurally diverse optically active vicinal diamines. Furthermore, the optically active  $\alpha$ -amino acid Weinreb amides (R)-Ph<sub>2</sub>C:NCHR<sub>3</sub>CONR<sub>4</sub>(OMe) (R<sub>3</sub> = Me, PhCH<sub>2</sub>; R<sub>4</sub> = Et, Bu, H<sub>2</sub>C:CHCH<sub>2</sub>, 1-naphthylmethyl, etc.) can be efficiently converted to the corresponding amino ketones by a simple treatment with Grignard reagents. In addition, reduction and alkylation of the optically active  $\alpha$ -amino ketone into both syn and anti  $\alpha$ -amino alcs. with almost complete relative and absolute stereochem. control have been achieved. With (S,S)- and (R,R)-binaphthalene-based designer chiral quaternary ammonium salts as catalysts in hand, the present approach renders both enantiomers of  $\alpha$ -amino amides including Weinreb amides readily available with enormous structural variation and also establishes a general and practical route to vicinal diamines,  $\alpha$ -amino ketones, and  $\alpha$ -amino alcs. with the desired stereochem.

IT 501934-20-9 501934-21-0

RL: CAT (Catalyst use); USES (Uses)

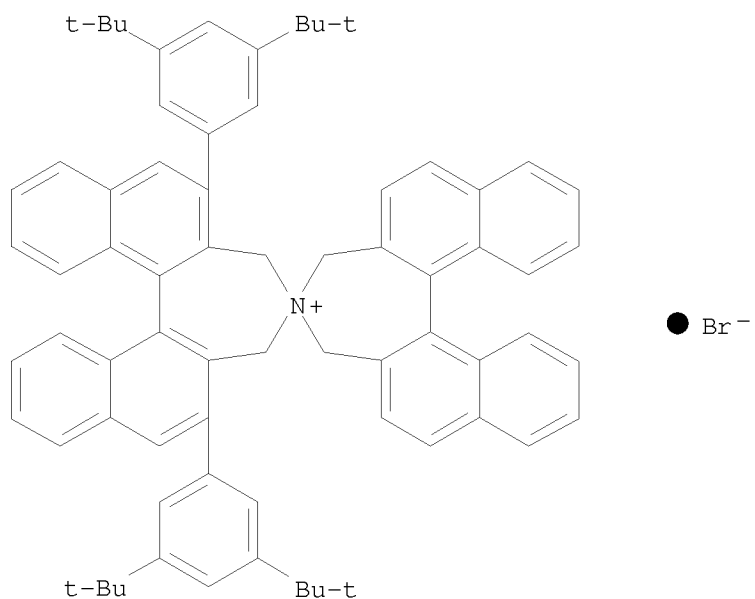
(asym. synthesis of vicinal diamines,  $\alpha$ -amino ketones,  $\alpha$ -amino alcs. and their derivs. via enantioselective phase-transfer alkylation of protected  $\alpha$ -amino acid amides catalyzed by binaphthalene-based quaternary ammonium salts)

RN 501934-20-9 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium], 2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide

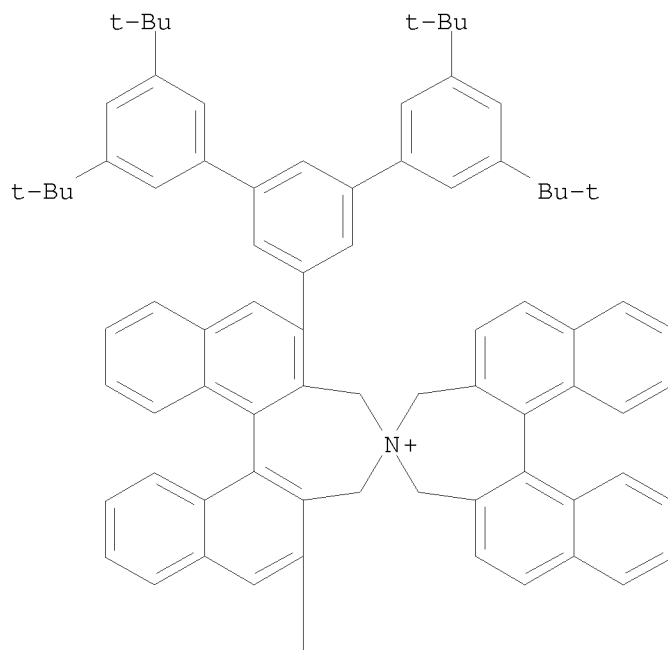
10/587,467

(1:1), (11bS,11'bs)- (CA INDEX NAME)

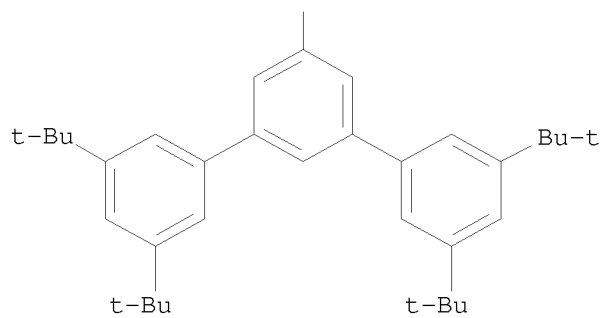


RN 501934-21-0 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-  
dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide (1:1),  
(11bS,11'bs)- (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



OS.CITING REF COUNT:	33	THERE ARE 33 CAPLUS RECORDS THAT CITE THIS RECORD (34 CITINGS)
REFERENCE COUNT:	90	THERE ARE 90 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 23 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:231314 CAPLUS

DOCUMENT NUMBER: 142:482279

TITLE: Powerful chiral phase-transfer catalysts for the asymmetric synthesis of  $\alpha$ -alkyl- and  $\alpha,\alpha$ -dialkyl- $\alpha$ -amino acids

AUTHOR(S): Kitamura, Masanori; Shirakawa, Seiji; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Sakyo, Kyoto, 606-8502, Japan

SOURCE: Angewandte Chemie, International Edition (2005), 44(10), 1549-1551, S1549/1-S1549/4

CODEN: ACIEF5; ISSN: 1433-7851

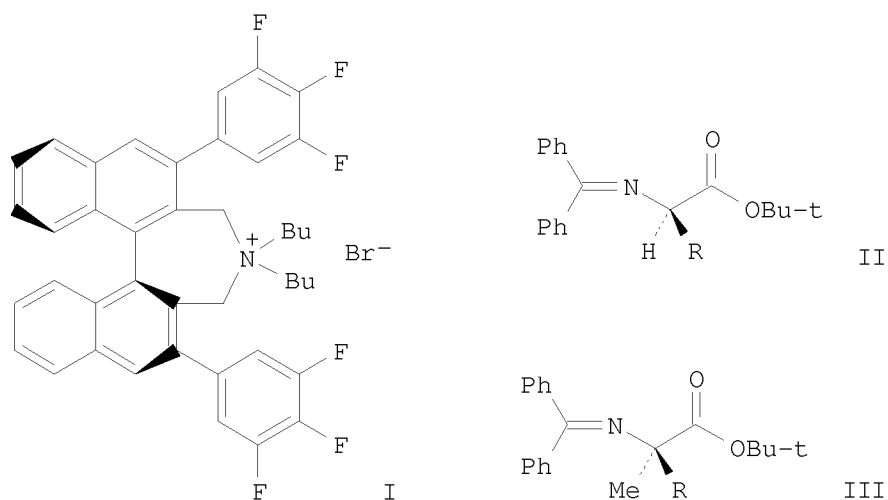
PUBLISHER: Wiley-VCH Verlag GmbH &amp; Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 142:482279

GI



AB The catalytic performance of binaphthyl-based quaternary ammonium salt I as the chiral phase-transfer catalyst (0.1-0.01 mol%) in the asym. alkylation of protected glycine and alanine derivs. exceeds that of existing catalysts. For example, I was used in the asym. alkylation of  $\text{Ph}_2\text{C}:\text{NCH}_2\text{CO}_2\text{Bu-t}$  by alkyl halide RX (RX =  $\text{PhCH}_2\text{Br}$ ,  $\text{H}_2\text{C}:\text{CHCH}_2\text{Br}$ ,  $\text{HC.tplbond.CCH}_2\text{Br}$ , 2-naphthylmethyl bromide, EtI) to give  $\alpha$ -alkyl amino acids II in yields  $\geq 81\%$  and enantiomeric excess  $\geq 98\%$ . In addition, racemic alanine derivative 4-ClC<sub>6</sub>H<sub>4</sub>CH:NCH(Me)CO<sub>2</sub>Bu-t was alkylated in the presence of I to give  $\alpha,\alpha$ -dialkyl amino acids III (R =  $\text{CH}_2\text{Ph}$ ,  $\text{CH}_2\text{CH}:\text{CH}_2$ , Et) in yields  $\geq 60\%$  and enantiomeric excess  $\geq 96\%$ .

IT 851942-94-4P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (crystal structure; preparation of binaphthyl-based quaternary ammonium salts as chiral phase-transfer catalysts for asym. alkylation of glycine and alanine Schiff bases)

RN 851942-94-4 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,

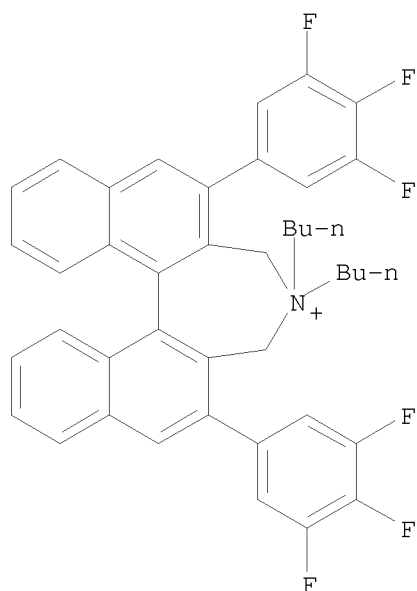
10/587,467

4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, (11bS)-,  
hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 851942-93-3

CMF C42 H36 F6 N

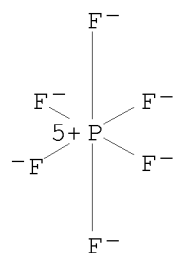


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



IT 851942-85-3P 851942-87-5P 851942-89-7P

851942-91-1P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
USES (Uses)

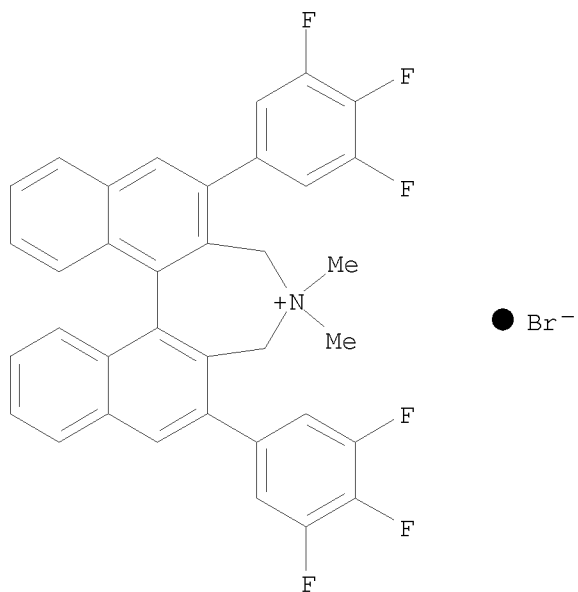
(preparation of binaphthyl-based quaternary ammonium salts as chiral  
phase-transfer catalysts for asym. alkylation of glycine and alanine)

10/587,467

Schiff bases)

RN 851942-85-3 CAPLUS

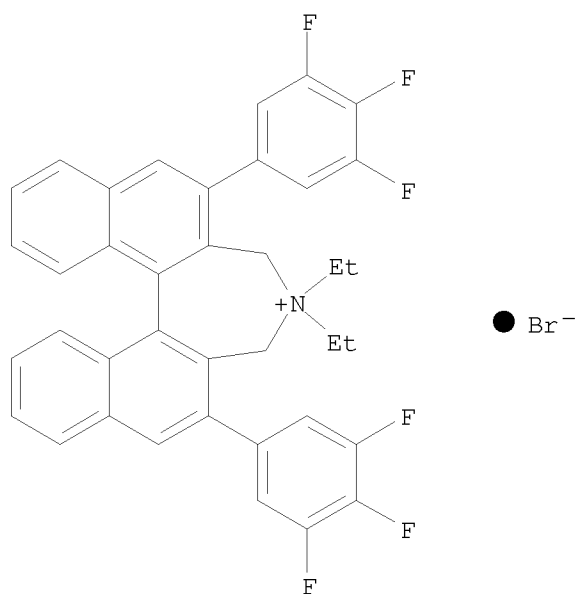
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-dimethyl-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1)  
(CA INDEX NAME)



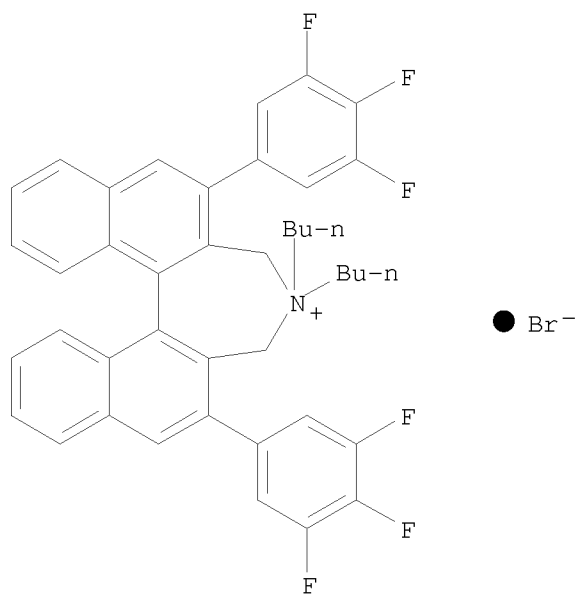
RN 851942-87-5 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-diethyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)

10/587,467



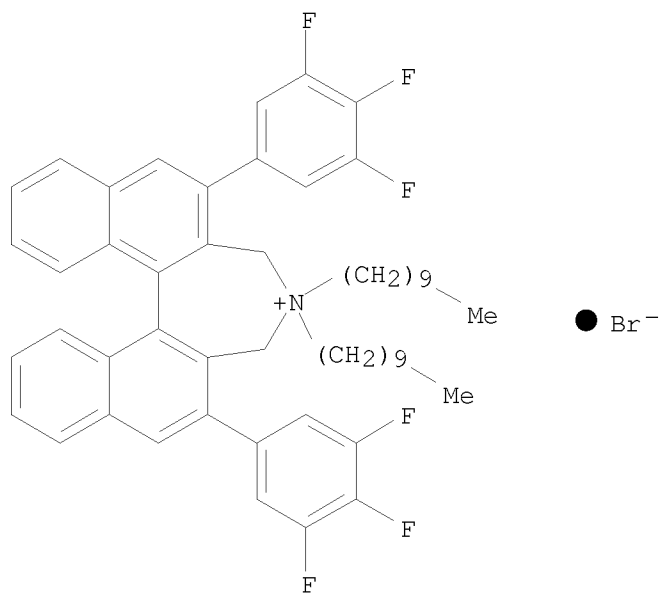
RN 851942-89-7 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-dibutyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)



RN 851942-91-1 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-didecyl-4,5-dihydro-2,6-bis(3,4,5-trifluorophenyl)-, bromide (1:1),  
(11bS)- (CA INDEX NAME)



10/587,467



OS.CITING REF COUNT: 58

THERE ARE 58 CAPLUS RECORDS THAT CITE THIS  
RECORD (59 CITINGS)

REFERENCE COUNT: 1

THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 24 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2005:87810 CAPLUS  
 DOCUMENT NUMBER: 142:317049  
 TITLE: Dramatic rate enhancement of asymmetric  
 phase-transfer-catalyzed alkylations  
 AUTHOR(S): Shirakawa, Seiji; Yamamoto, Kenichiro; Kitamura,  
 Masanori; Ooi, Takashi; Maruoka, Keiji  
 CORPORATE SOURCE: Department of Chemistry, Kyoto University, Sakyo,  
 Kyoto, 606-8502, Japan  
 SOURCE: Angewandte Chemie, International Edition (2005),  
 44(4), 625-628  
 CODEN: ACIEF5; ISSN: 1433-7851  
 PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 142:317049  
 GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Nonracemic amino acid ester benzophenone imines I (R = Et, H<sub>2</sub>C:CHCH<sub>2</sub>, PhCH<sub>2</sub>, 1-naphthylmethyl) are prepared in 63-98% yields and in 91-98% ee by alkylation of tert-Bu glycinate benzophenone imine I (R = H) with either alkyl bromides RBr or Et iodide and potassium hydroxide in the presence of 0.05-0.5 mol% nonracemic tetraalkylammonium bromide II•Br<sup>-</sup> and either crown ethers such as 18-crown-6 or tetrabutylammonium or tetraoctylammonium bromides using toluene and water in a biphasic mixture 18-Crown-6, dicyclohexano-18-crown-6, and crypt-2,2,2 are all effective phase transfer catalysts for the enantioselective alkylation, while neither 15-crown-5 or 12-crown-4 are effective catalysts. Tetramethylammonium bromide, N-methylpyridinium iodide and N-butylpyridinium chloride are ineffective ammonium salt phase transfer catalysts for the enantioselective alkylation. 0.05-0.1 Mol% of II•Br<sup>-</sup> can be used as a catalyst in the presence of 18-crown-6 if reactive alkyl halides are used; alkylation using Et iodide requires 0.5-1.0 mol% of II•Br<sup>-</sup> and 0.5 mol% of 18-crown-6 to achieve effective alkylation rates.

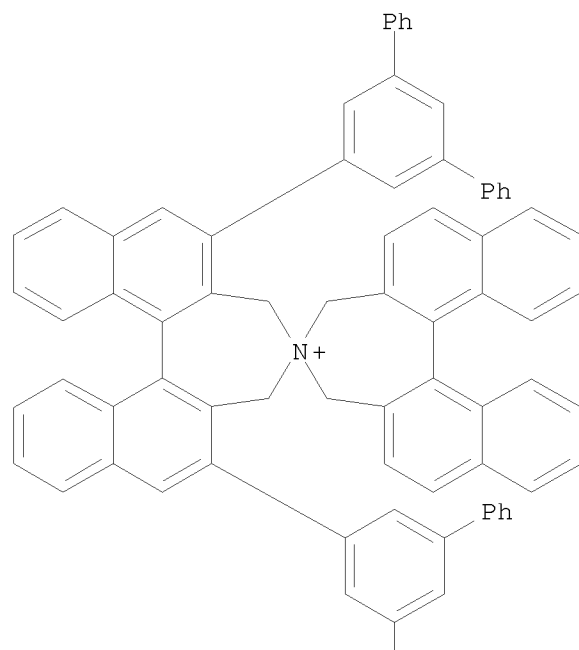
IT 466679-93-6

RL: CAT (Catalyst use); USES (Uses)

(enantioselective preparation of amino acid tert-Bu ester benzophenone imines by alkylation of tert-Bu glycinate benzophenone imine in presence of nonracemic phase transfer catalyst and either crown ethers or tetraalkylammonium salts)

RN 466679-93-6 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 2,6-bis([1,1':3',1''-terphenyl]-5'-yl)-3,3',5,5'-tetrahydro-, bromide  
 (1:1), (11bR,11'bR)- (CA INDEX NAME)



OS.CITING REF COUNT:	37	THERE ARE 37 CAPLUS RECORDS THAT CITE THIS RECORD (37 CITINGS)
REFERENCE COUNT:	46	THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 25 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:71165 CAPLUS

DOCUMENT NUMBER: 142:176719

TITLE: Preparation of optically active spiro-binaphthyl  
 quaternary ammonium salts, process for producing the  
 same, and process for producing optically active  
 $\alpha$ -amino acid derivative with the same

INVENTOR(S): Maruoka, Keiji

PATENT ASSIGNEE(S): Tosoh Corporation, Japan

SOURCE: PCT Int. Appl., 109 pp.

CODEN: PIXXD2

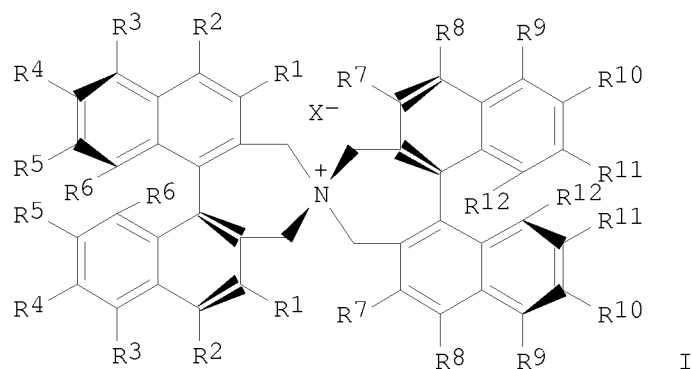
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005007622	A2	20050127	WO 2004-JP10387	20040722
WO 2005007622	A3	20050331		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
JP 2005041791	A	20050217	JP 2003-200673	20030723
JP 2005041792	A	20050217	JP 2003-200674	20030723
EP 1650212	A2	20060426	EP 2004-770860	20040722
R: CH, DE, GB, LI				
US 20060183896	A1	20060817	US 2006-563658	20060207
US 7566779	B2	20090728		
PRIORITY APPLN. INFO.:			JP 2003-200673	A 20030723
			JP 2003-200674	A 20030723
			WO 2004-JP10387	W 20040722
OTHER SOURCE(S):	MARPAT 142:176719			
GI				



AB Optically active quaternary ammonium salts (I) [R1-R12 = H, Me, Et, each C3-18 straight-chain, branched or cyclic alkyl, heteroalkyl, alkenyl, or alkynyl, C1-18 alkoxy, C5-20 aryl, each C5-35 aralkyl or heteroaralkyl; provided that at least one of R1 -R12 is R13R14R15Si; wherein R13-R15 = Me, Et, vinyl, each C3-18 each C3-18 straight-chain, branched or cyclic alkyl, heteroalkyl, alkenyl, or alkynyl, C1-18 alkoxy, C5-20 aryl, each C5-35 aralkyl or heteroaralkyl; X = F, Cl, Br, iodo, p-toluenesulfonyloxy, HO, thiocyanato, HSO<sub>4</sub>, ClO<sub>4</sub>, PF<sub>6</sub>; a combination of axial asymmetry in the two binaphthyl moiety is (R,R) or (S,S)] are prepared When used as an asym.-axis-containing spiro type phase-transfer catalyst for the asym. alkylation of a glycine derivative, these compds. show high stereoselectivity for substrates such as ones having a small mol. size, e.g., Me iodide, and sec-alkyl halides. An optically active  $\alpha$ -amino acid derivative is produced stereoselectively and useful as an intermediate for medicines and agricultural chems. A novel optically active quaternary ammonium salt I has high performance when used as an asym.-axis-containing spiro type phase-transfer catalyst for the asym. alkylation of a glycine derivative, and in which the rings constituting the spiro skeleton have the same structure, which is advantageous from the standpoint of the number of catalyst synthesis steps. An asym.-axis-containing spiro type ammonium salt I having an alkyl- or aryl-substituted silyl group introduced on an aromatic ring is used as a phase-transfer catalyst to conduct the asym. alkylation of a glycine derivative An asym.-axis-containing spiro type ammonium salt I having introduced therein a substituent including a perfluoroalkyl group is used in the asym. alkylation of a glycine derivative and then recovered with a fluoruous solvent. Thus, 3.15 mmol 4,6,4',6'-tris(tributylsilyl)-2,2'-bis(bromomethyl)-1,1'-binaphthyl, 28% aqueous NH<sub>3</sub> solution (0.77 mL, 12.6 mmol), and 5 mL MeCN were heated at reflux

in

a sealed tube with stirring for 24 h to give spiro-binaphthyl ammonium bromide I (R2 = R4 = R8 = R10 = SiBu<sub>3</sub>, R1 = R3 = R5 = R6 = R7 = R9 = R11 = R12 = H) (II). Benzyl bromide (0.6 mmol) was added dropwise to a mixture of 0.5 mmol N-(diphenylmethylene)glycine tert-Bu ester, 0.05 mmol II, and 1.0 mL 50% aqueous NaOH solution at 0° and the resulting mixture was stirred at 0° 50 h 92% N-(diphenylmethylene)-L-phenylalanine tert-Bu ester (99% ee).

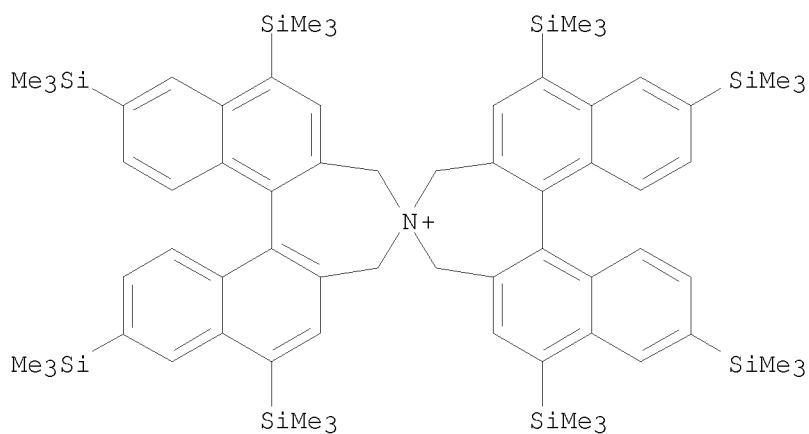
IT 832745-36-5P 832745-37-6P 832745-38-7P  
832745-39-8P 832745-40-1P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of optically active spiro-binaphthyl quaternary ammonium salts as phase-transfer catalysts for preparation of  $\alpha$ -amino acids by asym. alkylation of glycine derivative)

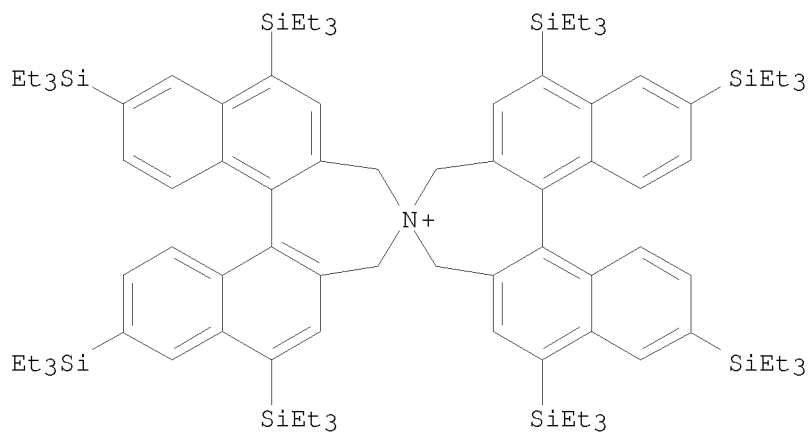
RN 832745-36-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octakis(trimethylsilyl)-,  
bromide (1:1), (11bR,11'bR)- (CA INDEX NAME)



RN 832745-37-6 CAPLUS

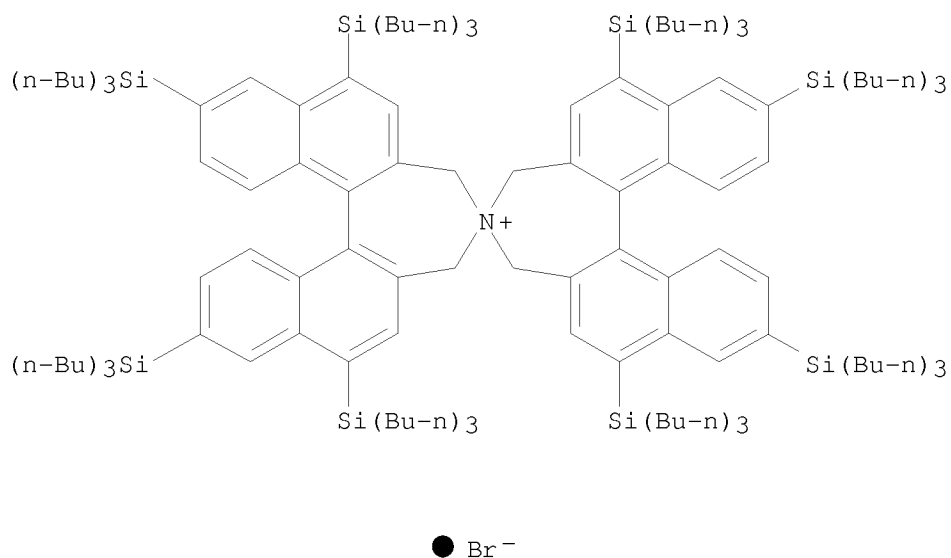
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octakis(triethylsilyl)-,  
bromide (1:1), (11bR,11'bR)- (CA INDEX NAME)



10/587,467

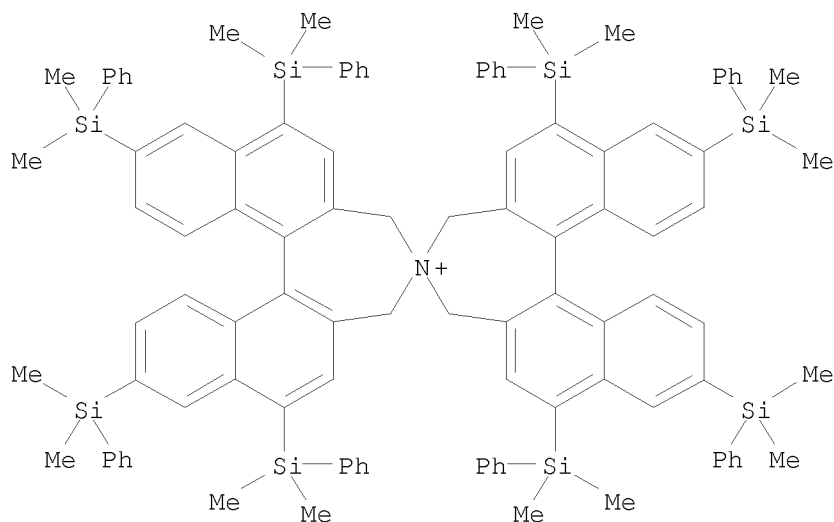
RN 832745-38-7 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octakis(tributylsilyl)-,  
bromide (1:1), (11bR,11'bR)- (CA INDEX NAME)



RN 832745-39-8 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
1,1',7,7',9,9',14,14'-octakis(dimethylphenylsilyl)-3,3',5,5'-tetrahydro-,  
bromide (1:1), (11bR,11'bR)- (CA INDEX NAME)

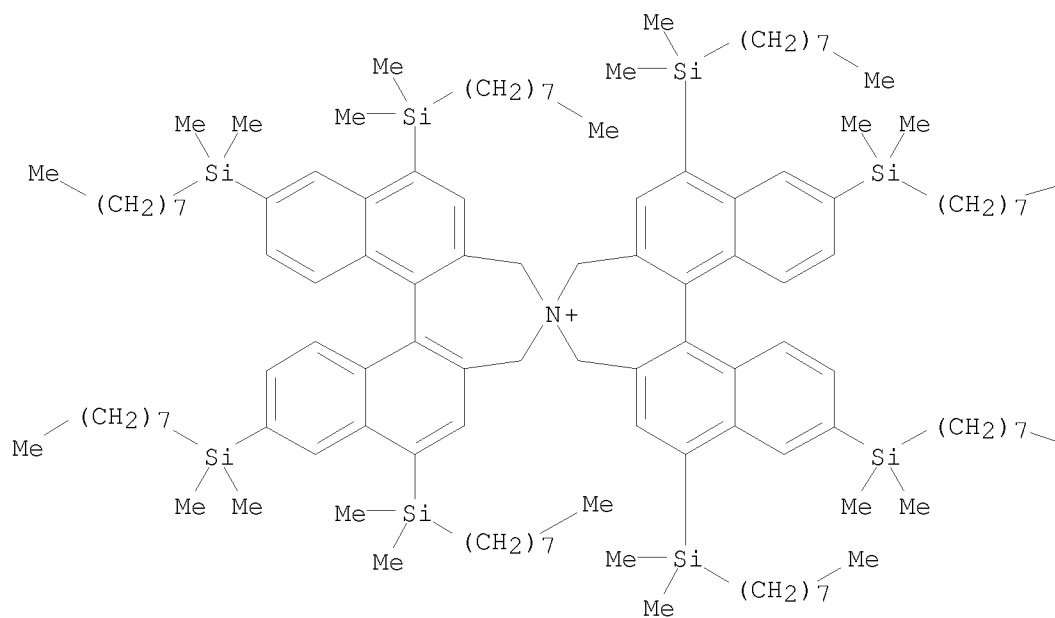


PAGE 1-A



RN 832745-40-1 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
1,1',7,7',9,9',14,14'-octakis(dimethyloctylsilyl)-3,3',5,5'-tetrahydro-,  
bromide (1:1), (11bR,11'bR)- (CA INDEX NAME)





— Me

● Br<sup>-</sup>

— Me

OS.CITING REF COUNT:	2	THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)
REFERENCE COUNT:	1	THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 26 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2004:1076624 CAPLUS  
 DOCUMENT NUMBER: 142:38019  
 TITLE: Preparation of  $\gamma$ -nitro carbonyl compounds  
 INVENTOR(S): Maruoka, Keiji; Oi, Takashi  
 PATENT ASSIGNEE(S): Nagase & Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 61 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004352708	A	20041216	JP 2004-89863	20040325
PRIORITY APPLN. INFO.:			JP 2003-127516	A 20030502
OTHER SOURCE(S):	MARPAT	142:38019		

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Title compds. are prepared by reaction of  $R_1CH:N+(O-)OSiR_2R_3R_4$  (I;  $R_1 = C_1-6$  alkoxy, (un)substituted  $C_1-5$  alkyl;  $R_2-R_4 = C_1-5$  alkyl) with  $R_7CH:CR_8COR_8'$  [ $R_7 = C_1-8$  (halo)alkyl,  $C_2-8$  (halo)alkenyl,  $C_2-8$  (halo)alkynyl, (un)substituted (hetero)aralkyl, etc.;  $R_8, R_8' = H, C_1-8$  (halo)alkyl,  $C_2-8$  (halo)alkenyl,  $C_2-8$  (halo)alkynyl, (un)substituted (hetero)aralkyl, etc.] in the presence of optically active quaternary ammonium bifluorides II [ $R_5, R_6 = H, C_1-8$  (halo)alkyl,  $C_2-8$  (halo)alkenyl,  $C_2-8$  (halo)alkynyl, (un)substituted (hetero)aralkyl, etc.;  $Y, Z = H, \text{organic group}$ ] and desilylation of optically active enol silyl ethers. Trans-cinnamaldehyde was treated with I ( $R_1-R_4 = Me$ ) in THF in the presence of quaternary ammonium III [ $Ar_1 = 3,5\text{-bis(trifluoromethyl)phenyl}$ ] at  $-78^\circ$  for 0.5 h and treated with HCl at  $0^\circ$  to give 68% 4-nitro-3-phenylpentanol (anti/syn = 85/15).

IT 586344-86-7P 807619-16-5P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
 USES (Uses)

(preparation of  $\gamma$ -nitro carbonyl compds. via addition of silyl nitronates to unsatd. carbonyl compds. using chiral ammonium catalysts)

RN 586344-86-7 CAPLUS

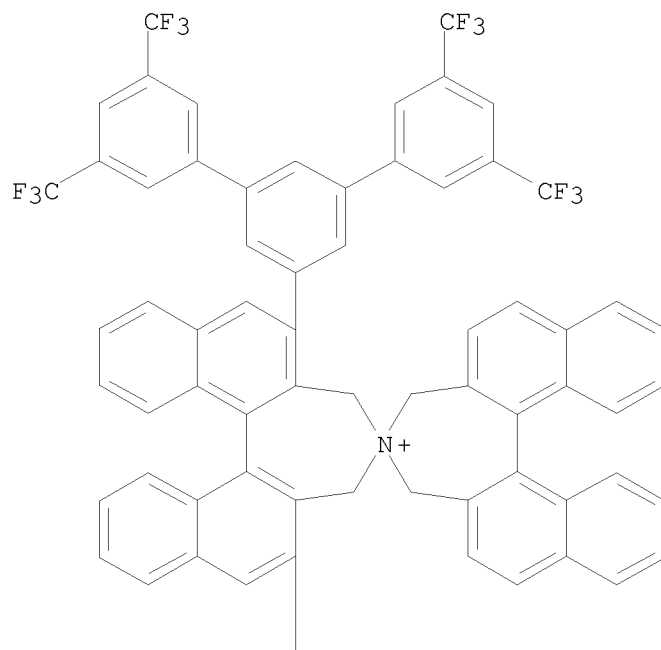
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
 tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bR,11'bR)-,  
 (hydrogen difluoride) (1:1) (CA INDEX NAME)

CM 1

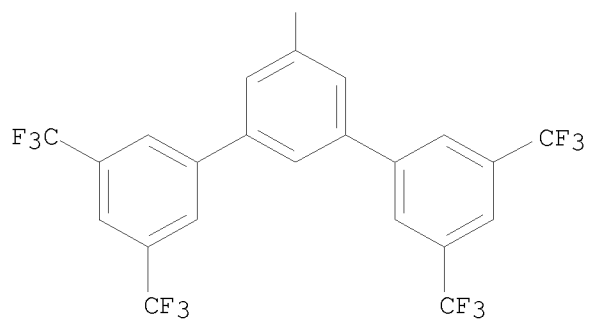
CRN 586344-85-6

CMF C88 H48 F24 N

PAGE 1-A

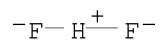


PAGE 2-A



CM 2

CRN 18130-74-0  
CMF F2 H



RN 807619-16-5 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],

10/587,467

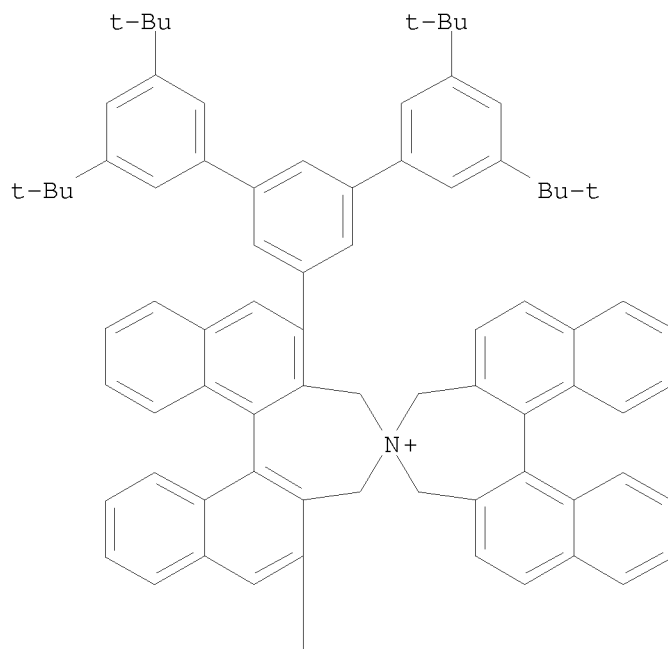
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bR,11'bR)-, (hydrogen difluoride) (9CI) (CA INDEX NAME)

CM 1

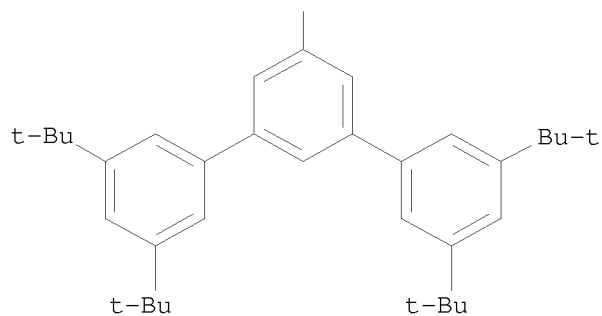
CRN 755750-10-8

CMF C112 H120 N

PAGE 1-A



PAGE 2-A

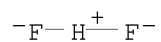


CM 2

CRN 18130-74-0

10/587,467

CMF F2 H



IT 534576-68-6

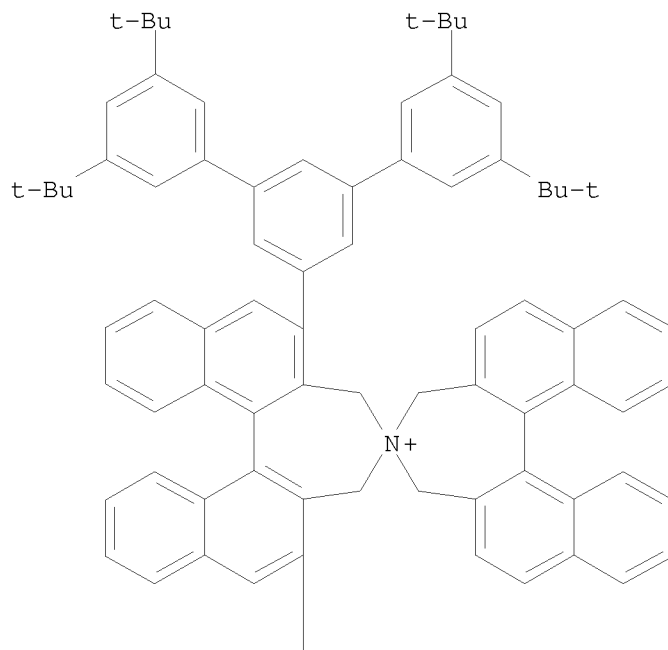
RL: RCT (Reactant); RACT (Reactant or reagent)

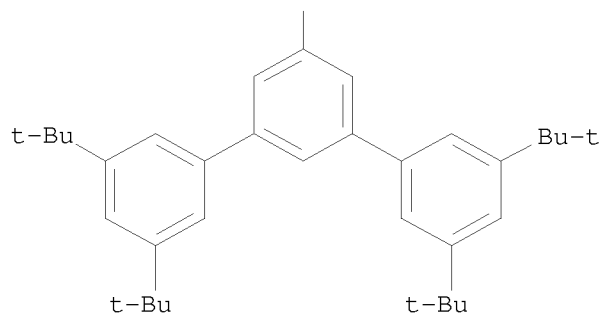
(preparation of  $\gamma$ -nitro carbonyl compds. via addition of silyl nitronates to unsatd. carbonyl compds. using chiral ammonium catalysts)

RN 534576-68-6 CAPLUS

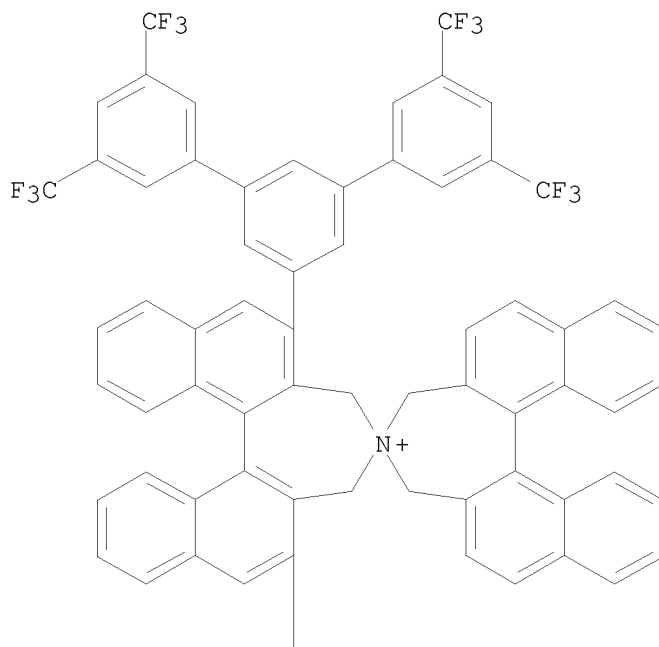
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide, (11bR,11'bR)-  
(9CI) (CA INDEX NAME)

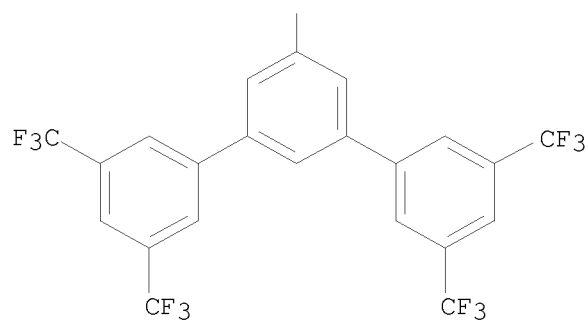
PAGE 1-A





IT 515137-98-1P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation of  $\gamma$ -nitro carbonyl compds. via addition of silyl nitronates  
 to unsatd. carbonyl compds. using chiral ammonium catalysts)  
 RN 515137-98-1 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
 tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide,  
 (11bR,11'bR)- (9CI) (CA INDEX NAME)





OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD  
(2 CITINGS)

L29 ANSWER 27 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:829203 CAPLUS

DOCUMENT NUMBER: 143:44038

TITLE: Anti-selective asymmetric synthesis of  $\beta$ -hydroxy- $\alpha$ -amino acid esters by the in situ generated chiral quaternary ammonium fluoride-catalyzed Mukaiyama-type aldol reaction

AUTHOR(S): Ooi, Takashi; Taniguchi, Mika; Doda, Kanae; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan

SOURCE: Advanced Synthesis & Catalysis (2004), 346(9 + 10), 1073-1076

CODEN: ASCAF7; ISSN: 1615-4150

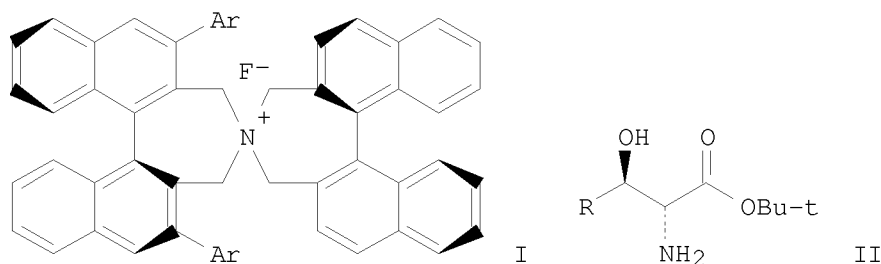
PUBLISHER: Wiley-VCH Verlag GmbH &amp; Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 143:44038

GI



AB The aldol coupling of RCHO [R = CH<sub>2</sub>CH<sub>2</sub>Ph, (CH<sub>2</sub>)<sub>4</sub>Me, (CH<sub>2</sub>)<sub>5</sub>Me, Bu-i, Pr-i] with (4-FC<sub>6</sub>H<sub>4</sub>)<sub>2</sub>C:NCH:C(OSiMe<sub>3</sub>)OBu-t, derived from the glycinate Schiff base, was efficiently catalyzed by an in-situ generated, chiral quaternary ammonium fluoride salt I [Ar = 3,4,5-trifluorophenyl, 3,5-bis(3,5-bis(trifluoromethyl)phenyl)phenyl] under mild, neutral conditions to afford anti- $\beta$ -hydroxy- $\alpha$ -amino esters II in yields  $\geq$  58% and enantiomeric excess  $\geq$  82%.

IT 401846-46-6 853642-72-5

RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(asym. preparation of anti-hydroxy amino esters via Mukaiyama-type aldol reaction with in-situ generated chiral quaternary ammonium fluoride catalysts)

RN 401846-46-6 CAPLUS

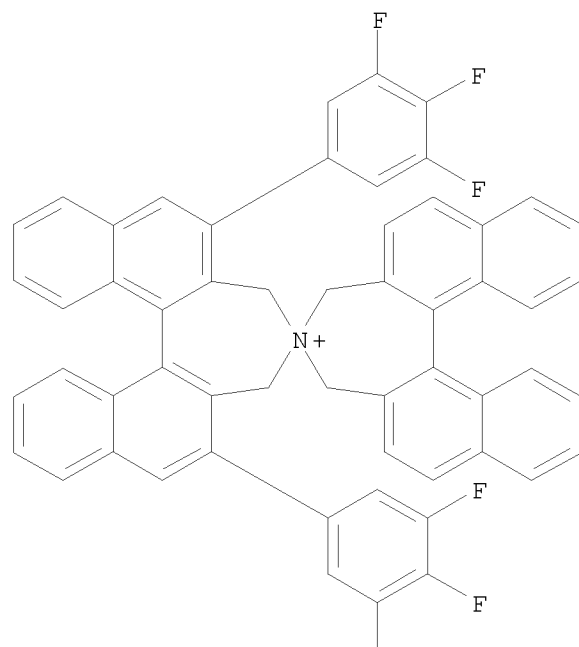
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium], 3,3',5,5'-tetrahydro-2,6-bis(3,4,5-trifluorophenyl)-, stereoisomer, sulfate (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 401846-45-5

CMF C56 H34 F6 N

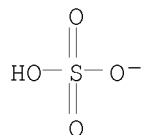




CM 2

CRN 14996-02-2

CMF H O4 S



RN 853642-72-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
 tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bS,11'bS)-,  
 sulfate (1:1) (9CI) (CA INDEX NAME)

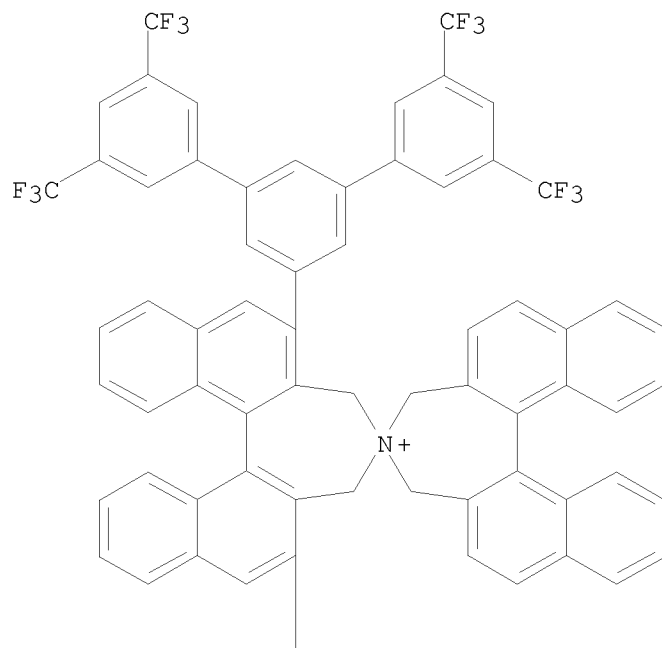
CM 1

CRN 503538-64-5

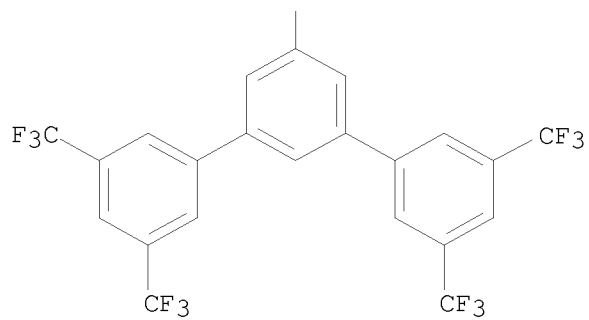
10/587,467

CMF C88 H48 F24 N

PAGE 1-A



PAGE 2-A

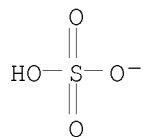


CM 2

CRN 14996-02-2

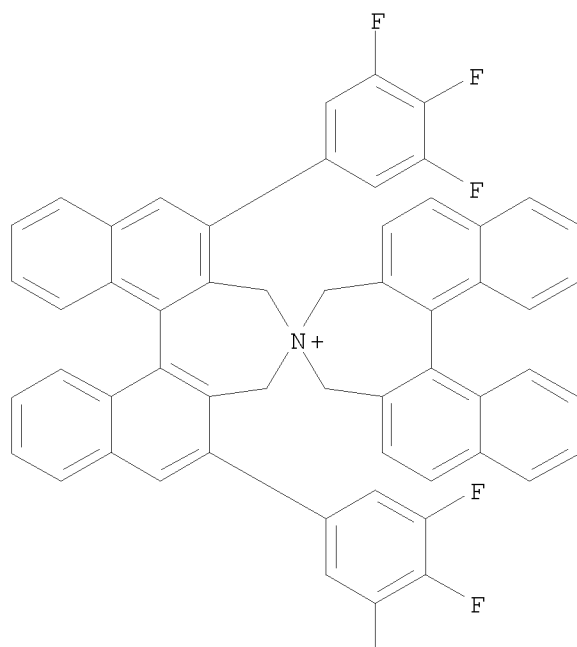
CMF H O4 S

10/587,467



IT 853642-73-6P 853642-74-7P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
USES (Uses)  
(asym. preparation of anti-hydroxy amino esters via Mukaiyama-type aldol  
reaction with in-situ generated chiral quaternary ammonium fluoride  
catalysts)  
RN 853642-73-6 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis(3,4,5-trifluorophenyl)-, fluoride,  
(11bS,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A



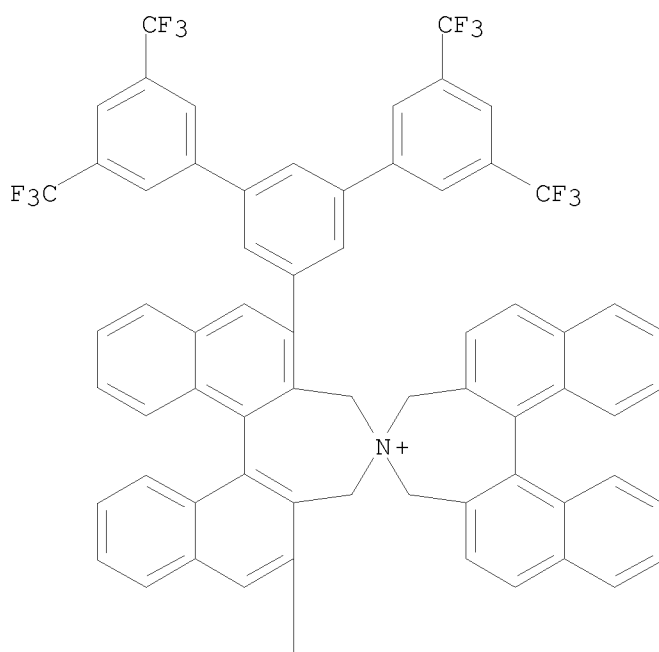
PAGE 2-A



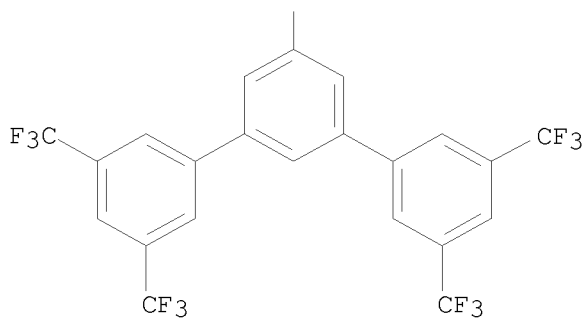
10/587,467

RN 853642-74-7 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, fluoride,  
(11bS,11'bs)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD  
(6 CITINGS)

10/587,467

REFERENCE COUNT:

47

THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 28 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2004:740332 CAPLUS  
 DOCUMENT NUMBER: 141:260392  
 TITLE: Quaternary ammonium bifluoride compound and process  
 for producing chiral nitroalcohol  
 INVENTOR(S): Maruoka, Keiji; Ooi, Takashi  
 PATENT ASSIGNEE(S): Nagase & Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 60 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004076459	A1	20040910	WO 2003-JP9500	20030725
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
AU 2003252268	A1	20040917	AU 2003-252268	20030725
PRIORITY APPLN. INFO.:			JP 2003-51773	A 20030227
			WO 2003-JP9500	W 20030725
OTHER SOURCE(S):	MARPAT 141:260392			
GI				

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Title compds. I·HF2- [R1, R2 = H, (un)substituted alkyl with halo, etc.] were prepared Compds. I·HF2- catalyzed process for the preparation of chiral nitroalcs. was provided. For example, to a solution of benzaldehyde (31.8 mg), compound (S,S)-I·HF2- [R1 = R2 = 3,5-bis(3,5-di(CF3)phenyl)phenyl] (9.6 mg) in THF (3 mL) was added trimethylsilylnitronate II (52.9 mg), e.g., prepared from nitroethane, at -98 °C. The resulting solution was stirred at -78 °C for 4 h, followed by aqueous work-up and silica-gel purification afforded (1R,2S)-2-nitro-1-phenylpropan-1-ol in 92% yield, 95% ee.

IT 586344-86-7 586344-89-0 756494-03-8  
 756494-05-0  
 RL: CAT (Catalyst use); USES (Uses)  
 (preparation of quaternary ammonium bifluoride catalyst)

RN 586344-86-7 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
 tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bR,11'bR)-,  
 (hydrogen difluoride) (1:1) (CA INDEX NAME)

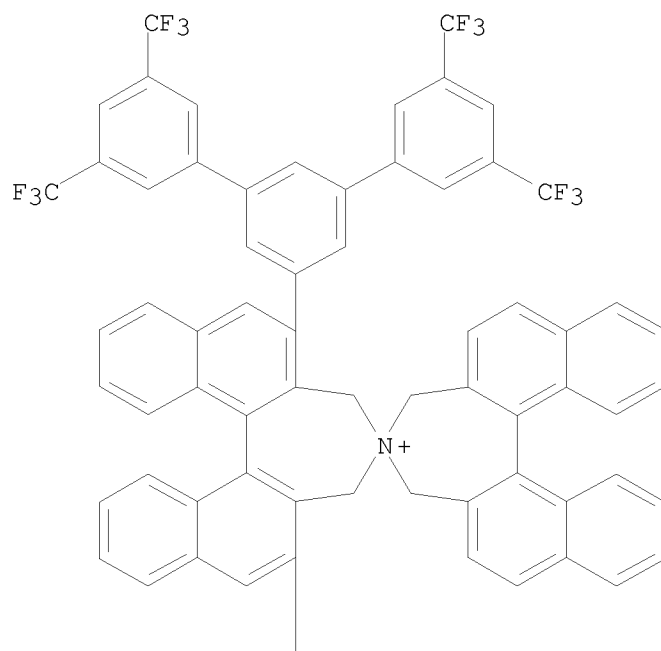
10/587,467

CM 1

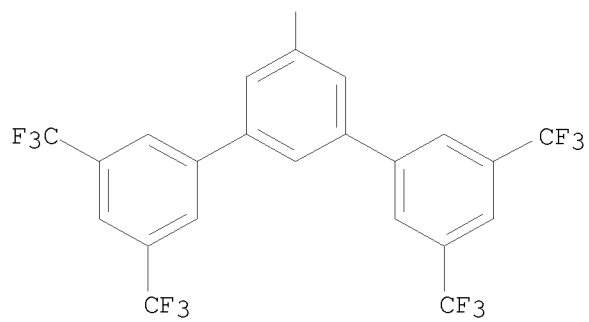
CRN 586344-85-6

CMF C88 H48 F24 N

PAGE 1-A



PAGE 2-A

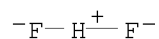


CM 2

CRN 18130-74-0

CMF F2 H

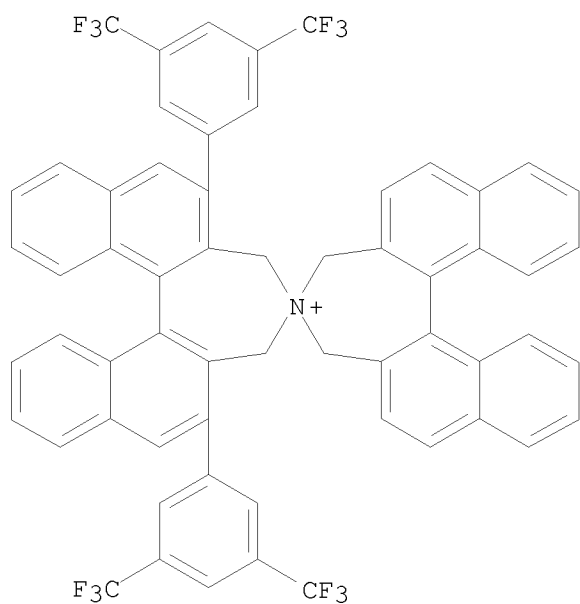
10/587,467



RN 586344-89-0 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)-, (hydrogen difluoride) (1:1) (CA INDEX NAME)

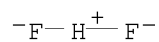
CM 1

CRN 586344-88-9  
CMF C60 H36 F12 N



CM 2

CRN 18130-74-0  
CMF F2 H



RN 756494-03-8 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (hydrogen  
difluoride) (9CI) (CA INDEX NAME)

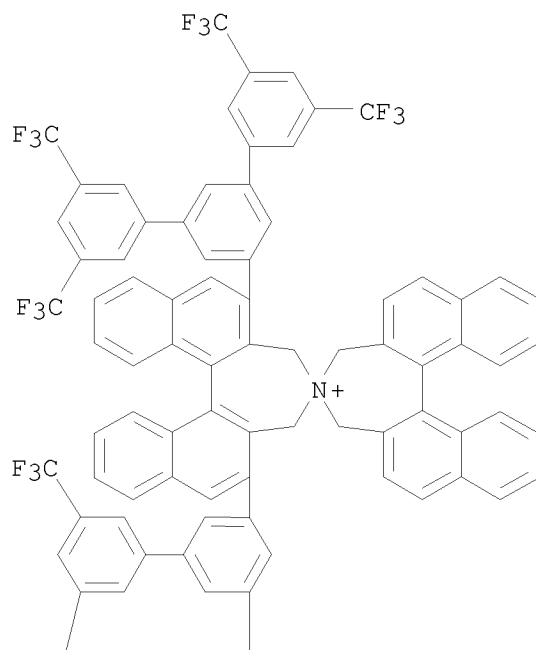
CM 1



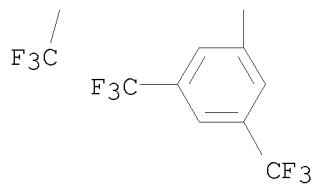
10/587,467

CRN 756494-02-7  
CMF C88 H48 F24 N

PAGE 1-A

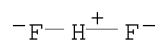


PAGE 2-A



CM 2

CRN 18130-74-0  
CMF F2 H



RN 756494-05-0 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-, (hydrogen

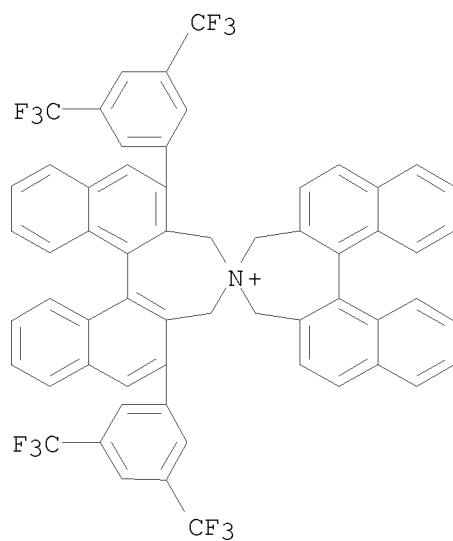
10/587,467

difluoride) (9CI) (CA INDEX NAME)

CM 1

CRN 756494-04-9

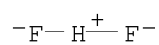
CMF C60 H36 F12 N



CM 2

CRN 18130-74-0

CMF F2 H

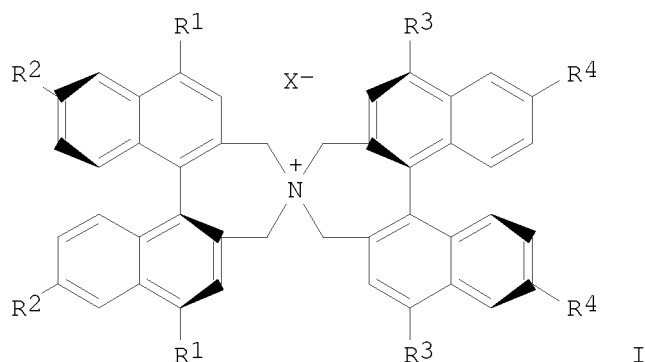


OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 29 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2004:695455 CAPLUS  
 DOCUMENT NUMBER: 141:207074  
 TITLE: Preparation of spirobi[(R)- or (S)-binaphthyldimethylammonium] derivatives and their use as phase-transfer catalysts for preparation of optically active  $\alpha$ -amino acids  
 INVENTOR(S): Maruoka, Keiji  
 PATENT ASSIGNEE(S): Tosoh Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 49 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
JP 2004238362	A	20040826	JP 2003-31361	20030207
PRIORITY APPLN. INFO.:			JP 2003-31361	20030207
OTHER SOURCE(S):	MARPAT	141:207074		
GI				



AB Title compds. I [R1-R4 = H, Me, Et, vinyl, ethynyl, C3-10 linear, branched, cyclic alkyl, C5-20 (halo)aryl, etc.; R1-R4  $\neq$  H; X = halo, thiocyanide, HS04, Cl04, PF6] are prepared Their intermediates are also claimed. Thus, quaternization of (S)-1,1'-bi-2-bromomethyl-4-phenylnaphthyl with ammonia in a sealed tube gave 42% (S,S)-I (R1 = R3 = Ph, R2 = R4 = H, X = Br). Ph2C:NCH2CO2CMe3 was alkylated with PhCH2Br in PhMe in the presence of the ammonium salt and aqueous KOH at 0° for 6 h to give 86% (R)-Ph2C:NCH(CH2Ph)CO2CMe3 with 96% ee.

IT 583050-09-3P 583050-11-7P 596107-91-4P  
 596107-92-5P 596107-93-6P 596107-94-7P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
 USES (Uses)

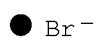
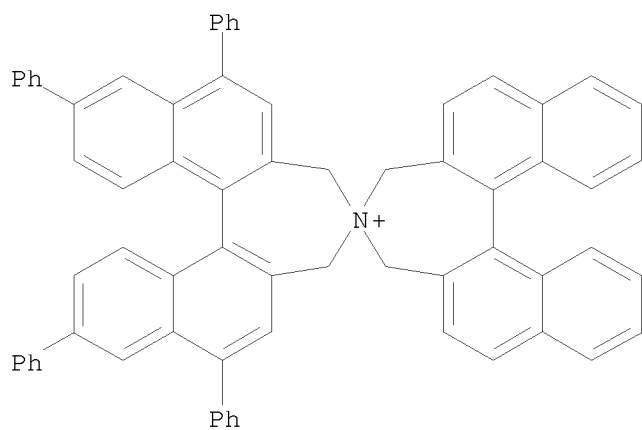
(preparation of optically active spirobi[binaphthyldimethylammonium] derivs.  
 as phase-transfer catalysts for preparation of optically active amino acids)

RN 583050-09-3 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-1,7,9,14-tetraphenyl-, bromide, (11bS,11'bS)- (9CI)

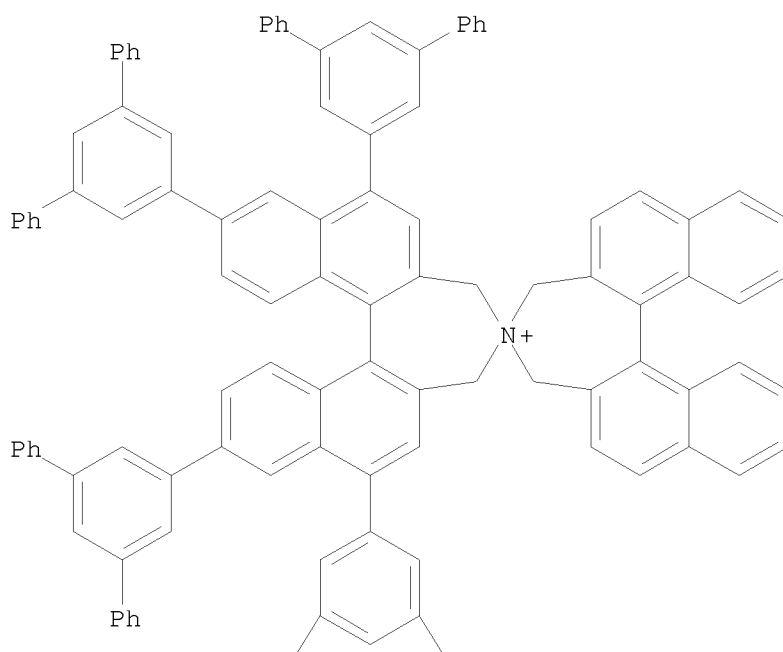
10/587,467

(CA INDEX NAME)



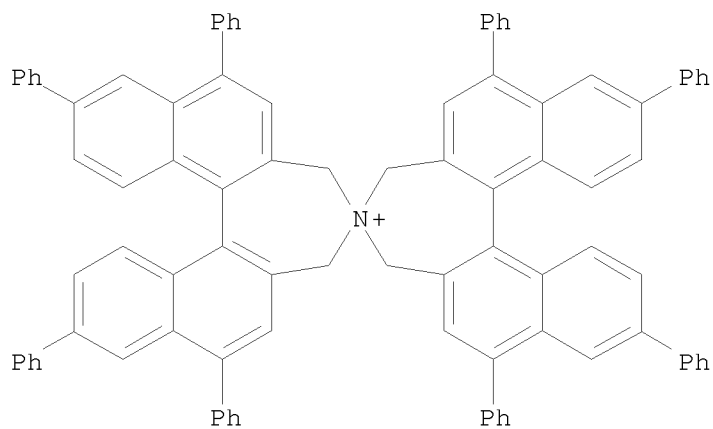
RN 583050-11-7 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,7,9,14-tetrakis([1,1':3',1''-terphenyl]-5'-yl)-,  
bromide, (11bS,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A



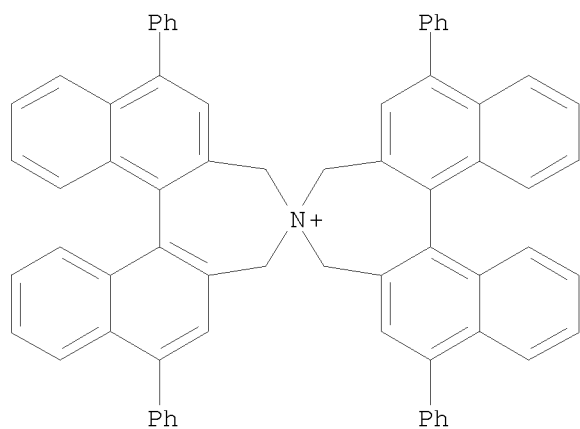


RN 596107-91-4 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octaphenyl-, bromide,  
 (11bS,11'bS)- (9CI) (CA INDEX NAME)



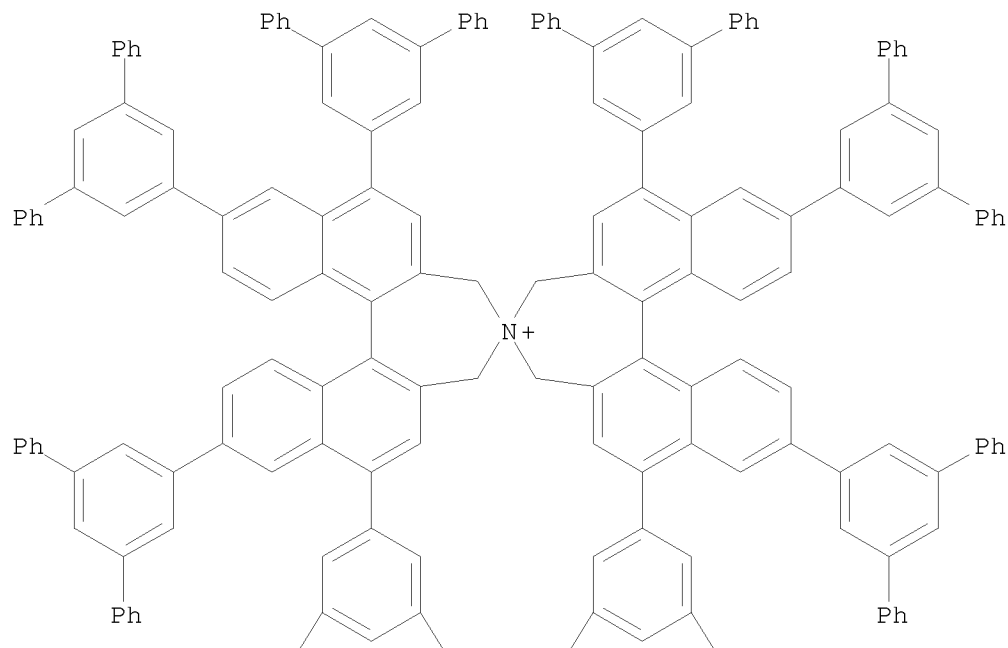
RN 596107-92-5 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-1,1',7,7'-tetraphenyl-, bromide, (11bS,11'bS)- (9CI)  
 (CA INDEX NAME)

10/587,467

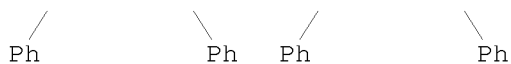


RN 596107-93-6 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octakis([1,1':3',1''-terphenyl]-  
5'-yl)-, bromide, (11bS,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A

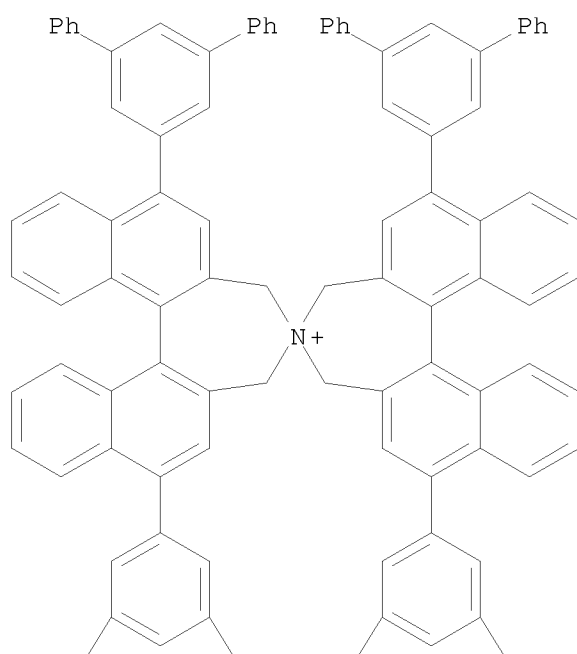


PAGE 2-A

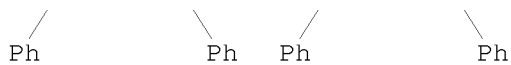


RN 596107-94-7 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-1,1',7,7'-tetrakis([1,1':3',1''-terphenyl]-5'-yl)-,  
 bromide, (11bS,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A

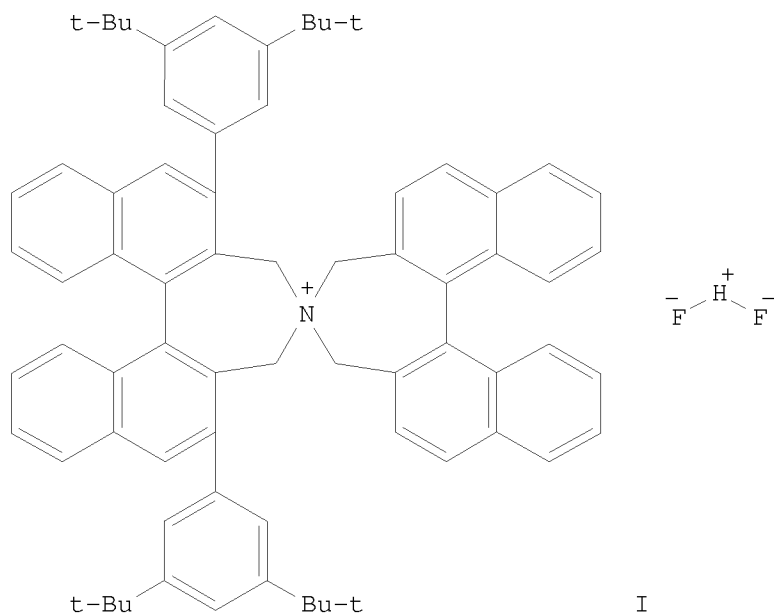


PAGE 2-A



OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD  
 (2 CITINGS)

L29 ANSWER 30 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2004:586239 CAPLUS  
 DOCUMENT NUMBER: 141:260338  
 TITLE: Evaluation of the relationship between the catalyst structure and regio- as well as stereoselectivity in the chiral ammonium bifluoride-catalyzed asymmetric addition of silyl nitronates to  $\alpha,\beta$ -unsaturated aldehydes  
 AUTHOR(S): Ooi, Takashi; Morimoto, Kumiko; Doda, Kanae; Maruoka, Keiji  
 CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan  
 SOURCE: Chemistry Letters (2004), 33(7), 824-825  
 CODEN: CMLTAG; ISSN: 0366-7022  
 PUBLISHER: Chemical Society of Japan  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 141:260338  
 GI



AB Unique relationship between the catalyst structure and regio- and stereoselectivity in the chiral quaternary ammonium bifluoride-catalyzed asym. addition of silyl nitronates to  $\alpha,\beta$ -unsatd. aldehydes has been reported. E.g., chiral catalyst (R,R)-I catalyzed the addition of TMSON(O):CH<sub>2</sub>Et and (E)-PhCH:CHCHO to give 99% (19:1) O<sub>2</sub>NCH<sub>2</sub>EtCHPhCH<sub>2</sub>CHO (II) and (E)-PhCH:CHCH(OH)CH<sub>2</sub>EtNO<sub>2</sub> (76:24 syn/anti for II and 94% ee for (3S,4R)-syn-II).

IT 586344-89-0 586344-91-4 756511-42-9  
 756511-45-2 756511-48-5 756511-52-1  
 756511-55-4 756511-58-7 756511-61-2  
 756511-65-6 756511-68-9 756512-74-0

RL: CAT (Catalyst use); USES (Uses)



10/587,467

(regio- and enantioselective Michael addition of silyl nitronates to  $\alpha,\beta$ -unsatd. aldehydes catalyzed by chiral quaternary ammonium bifluorides)

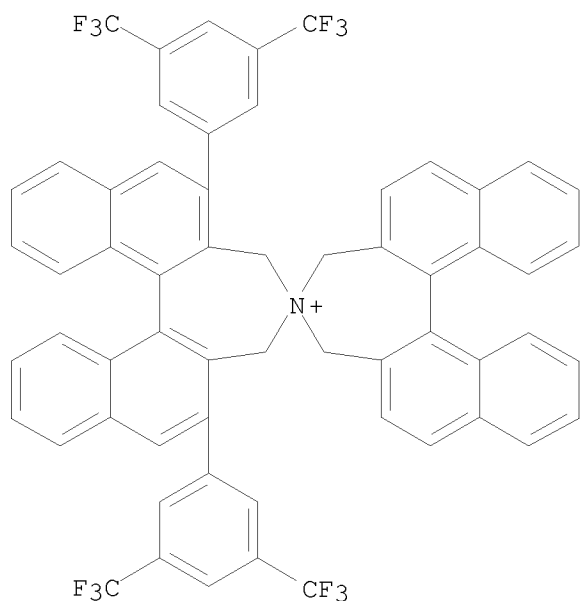
RN 586344-89-0 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)-, (hydrogen difluoride) (1:1) (CA INDEX NAME)

CM 1

CRN 586344-88-9

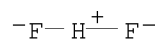
CMF C60 H36 F12 N



CM 2

CRN 18130-74-0

CMF F2 H



RN 586344-91-4 CAPLUS

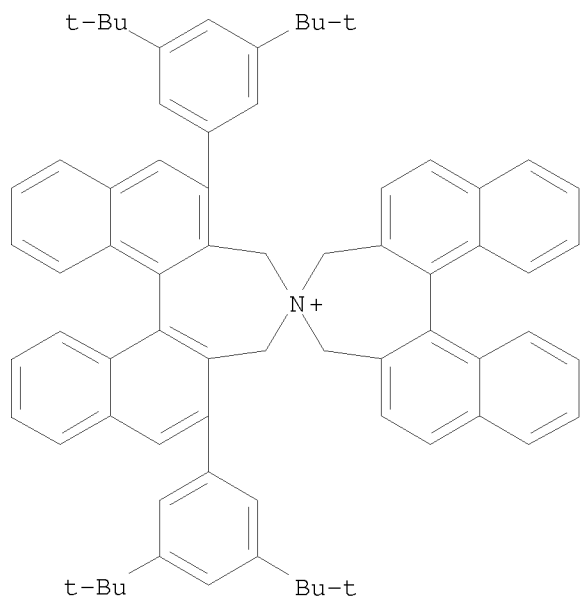
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)-, (hydrogen difluoride) (1:1) (CA INDEX NAME)

CM 1

CRN 586344-90-3

CMF C72 H72 N

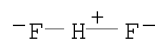
10/587,467



CM 2

CRN 18130-74-0

CMF F2 H



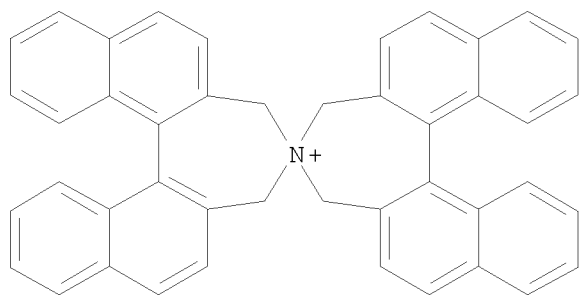
RN 756511-42-9 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium], 3,3',5,5'-tetrahydro-, (11bR,11'bR)-, (hydrogen difluoride) (9CI) (CA INDEX NAME)

CM 1

CRN 756511-41-8

CMF C44 H32 N

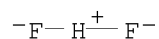


10/587,467

CM 2

CRN 18130-74-0

CMF F2 H



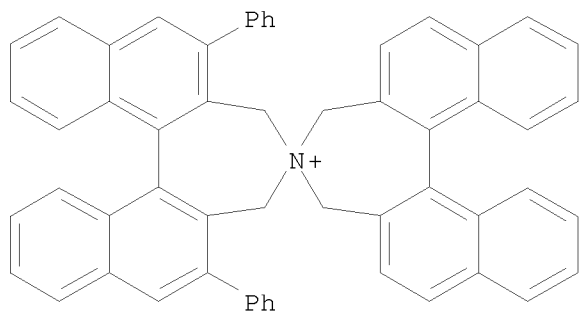
RN 756511-45-2 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-diphenyl-, (11bR,11'bR)-, (hydrogen difluoride)  
(9CI) (CA INDEX NAME)

CM 1

CRN 756511-44-1

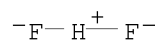
CMF C56 H40 N



CM 2

CRN 18130-74-0

CMF F2 H



RN 756511-48-5 CAPLUS

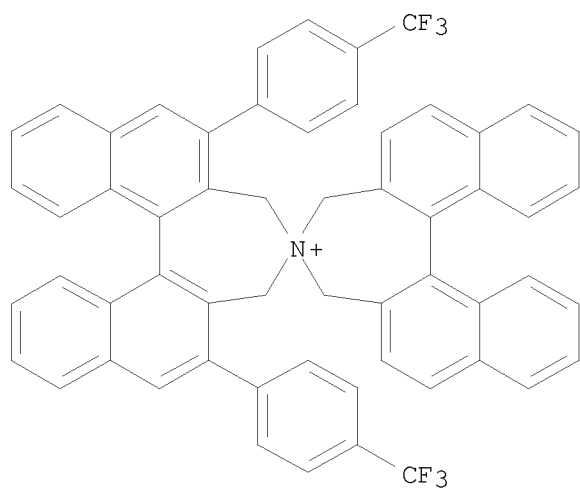
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[4-(trifluoromethyl)phenyl]-, (11bR,11'bR)-,  
(hydrogen difluoride) (9CI) (CA INDEX NAME)

CM 1

CRN 756511-47-4

CMF C58 H38 F6 N

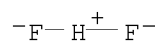
10/587,467



CM 2

CRN 18130-74-0

CMF F2 H



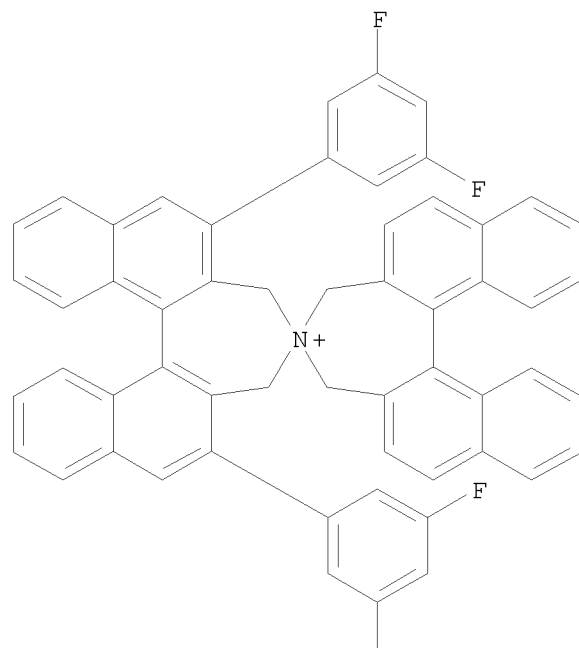
RN 756511-52-1 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,5-difluorophenyl)-3,3',5,5'-tetrahydro-, (11bR,11'bR)-,  
(hydrogen difluoride) (9CI) (CA INDEX NAME)

CM 1

CRN 756511-51-0

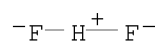
CMF C56 H36 F4 N



CM 2

CRN 18130-74-0

CMF F2 H



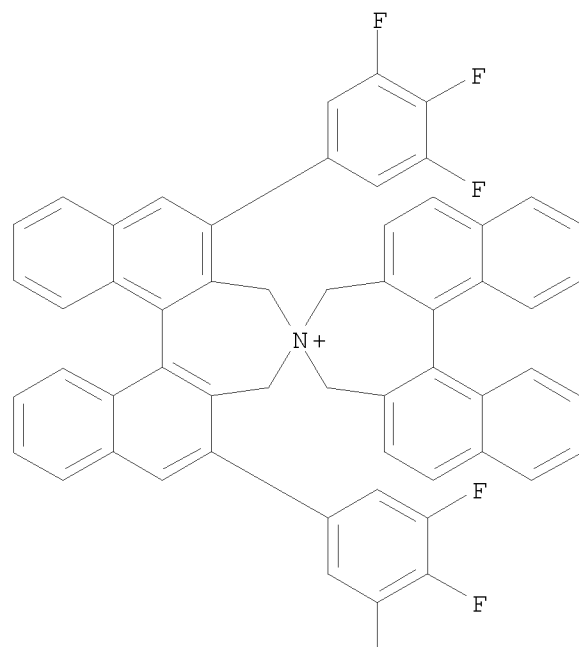
RN 756511-55-4 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis(3,4,5-trifluorophenyl)-, (11bR,11'bR)-,  
 (hydrogen difluoride) (9CI) (CA INDEX NAME)

CM 1

CRN 756511-54-3

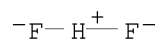
CMF C56 H34 F6 N



CM 2

CRN 18130-74-0

CMF F2 H



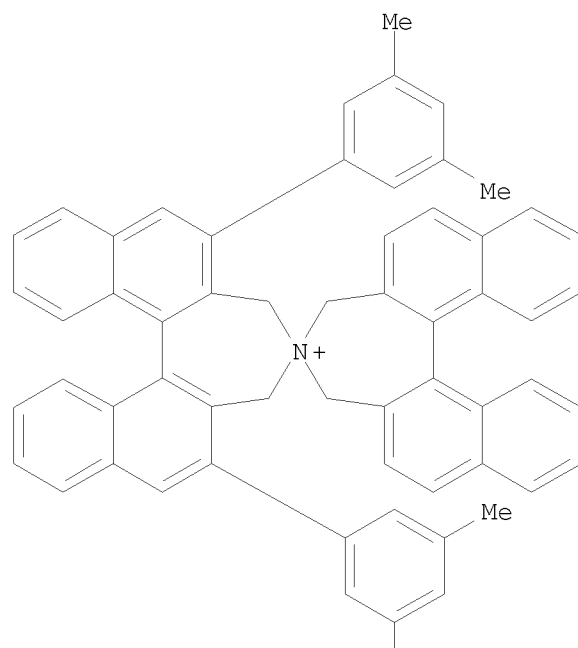
RN 756511-58-7 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 2,6-bis(3,5-dimethylphenyl)-3,3',5,5'-tetrahydro-, (11bR,11'bR)-,  
 (hydrogen difluoride) (9CI) (CA INDEX NAME)

CM 1

CRN 756511-57-6

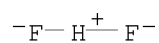
CMF C60 H48 N



CM 2

CRN 18130-74-0

CMF F2 H



RN 756511-61-2 CAPLUS

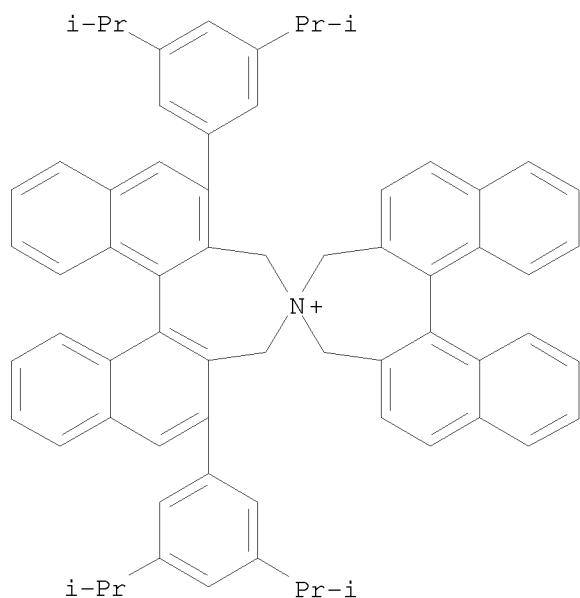
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 2,6-bis[3,5-bis(1-methylethyl)phenyl]-3,3',5,5'-tetrahydro-,  
 (11bR,11'bR)-, (hydrogen difluoride) (9CI) (CA INDEX NAME)

CM 1

CRN 756511-60-1

CMF C68 H64 N

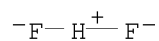
10/587,467



CM 2

CRN 18130-74-0

CMF F2 H



RN 756511-65-6 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
2',6'-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3',5,5',7-tetrahydro-,  
(11'bR)-, (hydrogen difluoride) (9CI) (CA INDEX NAME)

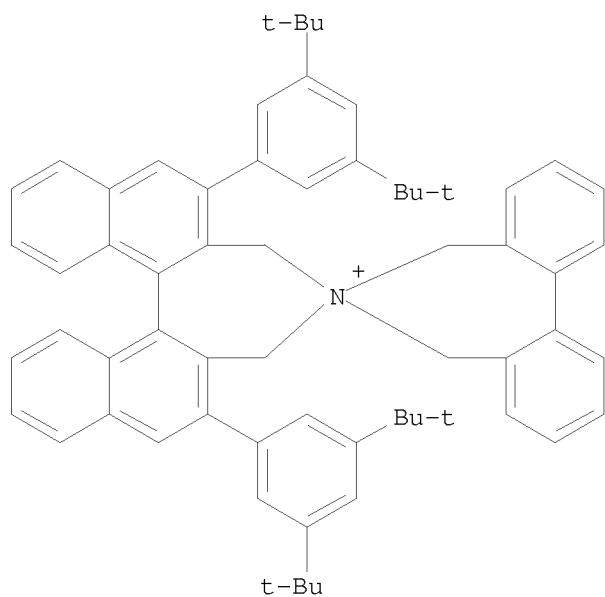
CM 1

CRN 756511-64-5

CMF C64 H68 N



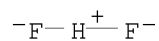
10/587,467



CM 2

CRN 18130-74-0

CMF F2 H



RN 756511-68-9 CAPLUS

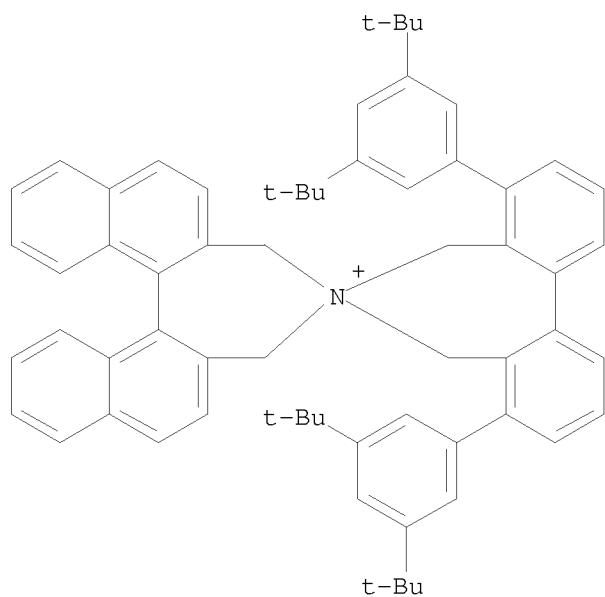
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
4,8-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3',5,5',7-tetrahydro-, (11'bR)-,  
(hydrogen difluoride) (9CI) (CA INDEX NAME)

CM 1

CRN 756511-67-8

CMF C64 H68 N

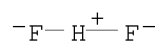
10/587,467



CM 2

CRN 18130-74-0

CMF F2 H



RN 756512-74-0 CAPLUS

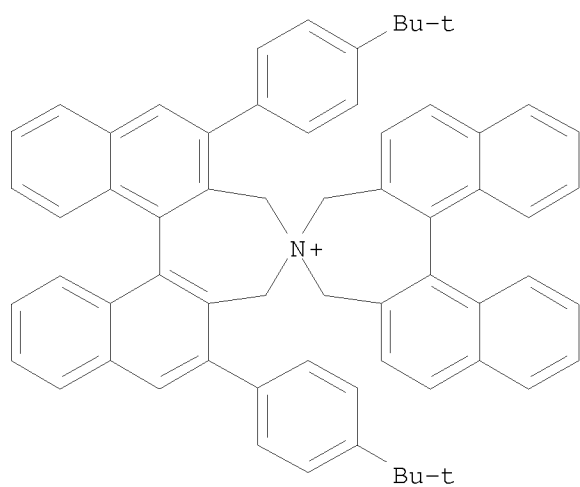
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[4-(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-, (11bR,11'bR)-,  
(hydrogen difluoride) (9CI) (CA INDEX NAME)

CM 1

CRN 756512-73-9

CMF C64 H56 N

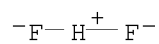
10/587,467



CM 2

CRN 18130-74-0

CMF F2 H



OS.CITING REF COUNT:	10	THERE ARE 10 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)
REFERENCE COUNT:	20	THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 31 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:566817 CAPLUS

DOCUMENT NUMBER: 141:277027

TITLE: Development of Highly Diastereo- and Enantioselective Direct Asymmetric Aldol Reaction of a Glycinate Schiff Base with Aldehydes Catalyzed by Chiral Quaternary Ammonium Salts

AUTHOR(S): Ooi, Takashi; Kameda, Minoru; Taniguchi, Mika; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan

SOURCE: Journal of the American Chemical Society (2004), 126(31), 9685-9694

CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 141:277027

AB A highly efficient direct asym. aldol reaction of a glycinate Schiff base with aldehydes has been achieved under mild organic/aqueous biphasic conditions with excellent stereochem. control, using a chiral quaternary ammonium salt as a phase-transfer catalyst. The initially developed reaction conditions, using 2 equiv of aqueous base (1% NaOH), exhibited inexplicably limited general applicability in terms of aldehyde acceptors. The mechanistic investigation revealed the intervention of an unfavorable yet inevitable retro aldol process involving the chiral catalyst. On the basis of this information, a reliable procedure has been established by use of a catalytic amount of 1% aq NaOH and ammonium chloride, which tolerates a wide range of aldehydes to afford anti- $\beta$ -hydroxy- $\alpha$ -amino esters almost exclusively in an essentially optically pure form.

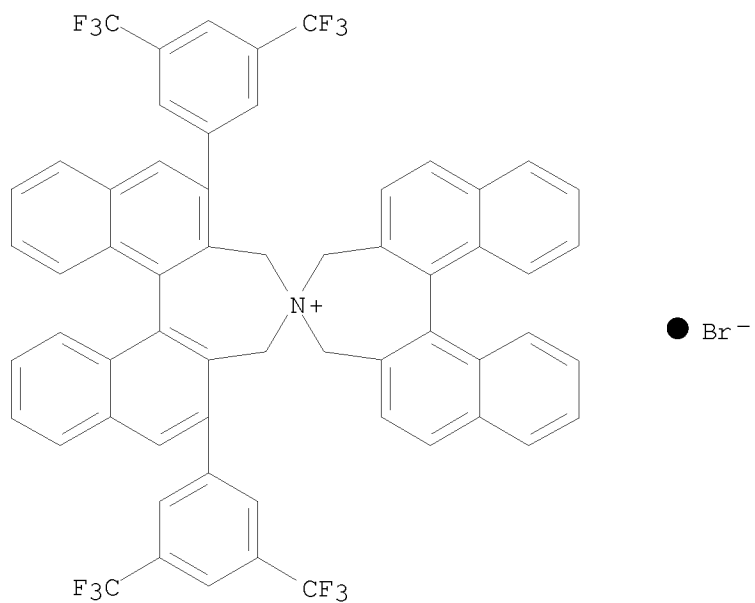
IT 515137-97-0 515137-98-1 757246-08-5  
757246-09-6

RL: CAT (Catalyst use); USES (Uses)

(stereoselective direct asym. aldol reaction of a glycinate Schiff base with aldehydes catalyzed by chiral quaternary ammonium salts)

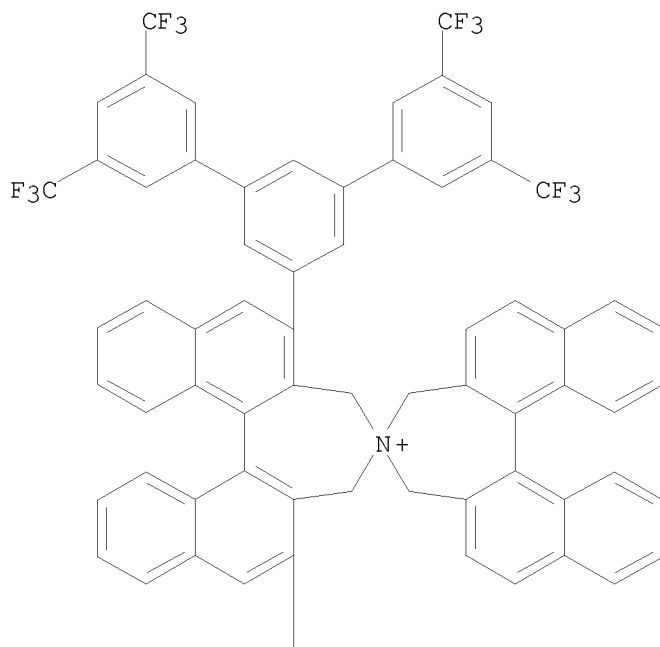
RN 515137-97-0 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide  
(1:1), (11bR,11'bR)- (CA INDEX NAME)

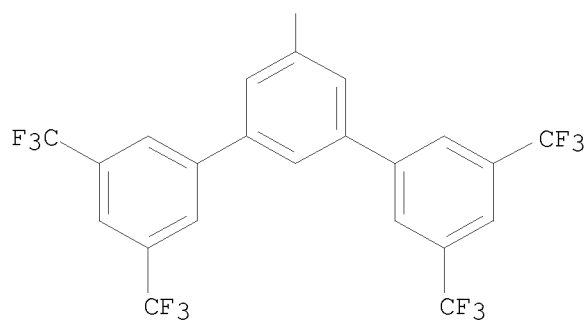


RN 515137-98-1 CAPLUS  
 CN 4,4'-Spiro[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
 tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide,  
 (11bR,11'bR)- (9CI) (CA INDEX NAME)

PAGE 1-A

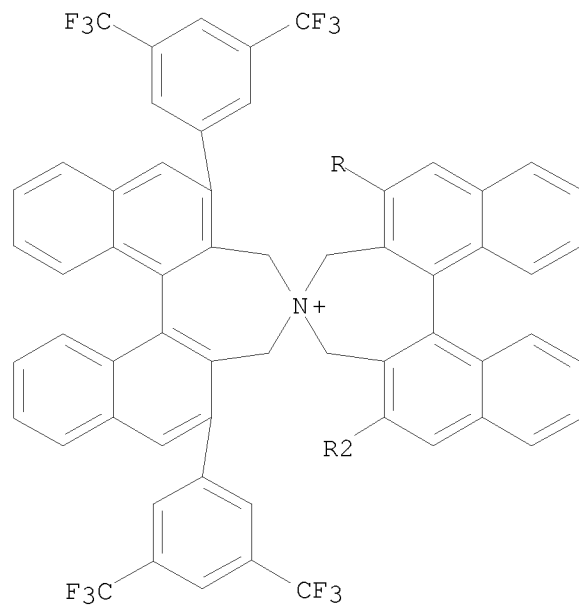


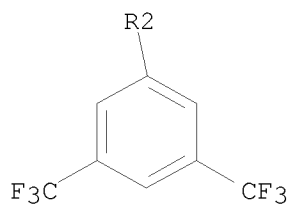
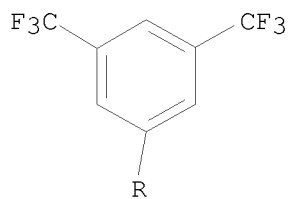
PAGE 2-A



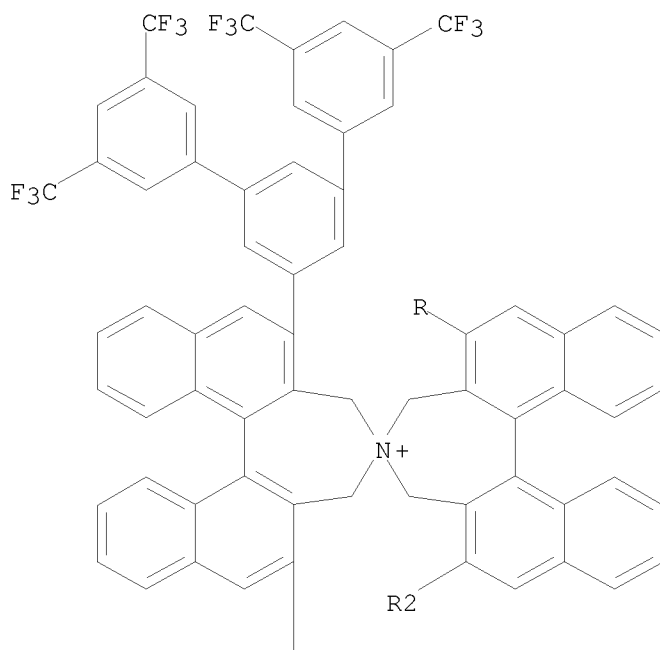
RN 757246-08-5 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 2,2',6,6'-tetrakis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
 bromide, (11bR,11'bR)- (9CI) (CA INDEX NAME)

PAGE 1-A

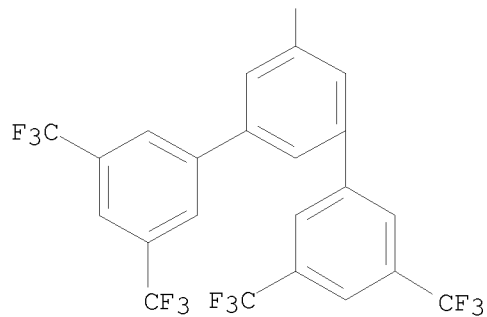




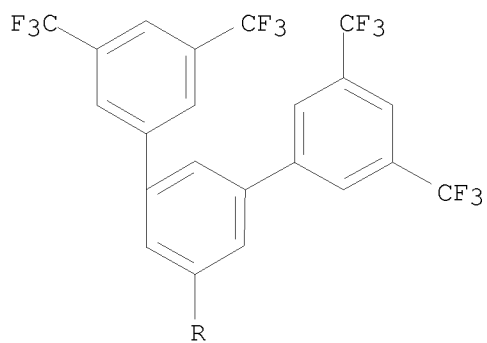
RN 757246-09-6 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,2',6,6'-tetrakis[3,3'',5,5''-  
 tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide,  
 (11bR,11'bR)- (9CI) (CA INDEX NAME)



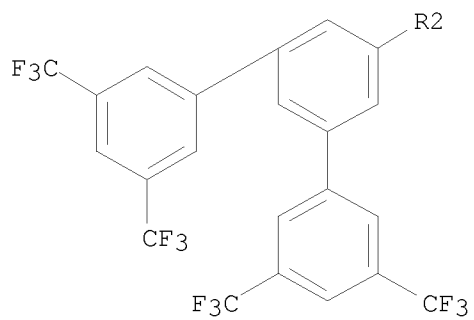
PAGE 2-A



PAGE 3-A



PAGE 4-A



OS.CITING REF COUNT: 57 THERE ARE 57 CAPLUS RECORDS THAT CITE THIS



10/587,467

REFERENCE COUNT:	83	RECORD (57 CITINGS) THERE ARE 83 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
------------------	----	---

L29 ANSWER 32 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:482335 CAPLUS

DOCUMENT NUMBER: 141:191014

TITLE: Catalytic Asymmetric Synthesis of a Nitrogen Analogue of Dialkyl Tartrate by Direct Mannich Reaction under Phase-Transfer Conditions

AUTHOR(S): Ooi, Takashi; Kameda, Minoru; Fujii, Junichi; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan

SOURCE: Organic Letters (2004), 6(14), 2397-2399

CODEN: ORLEF7; ISSN: 1523-7060

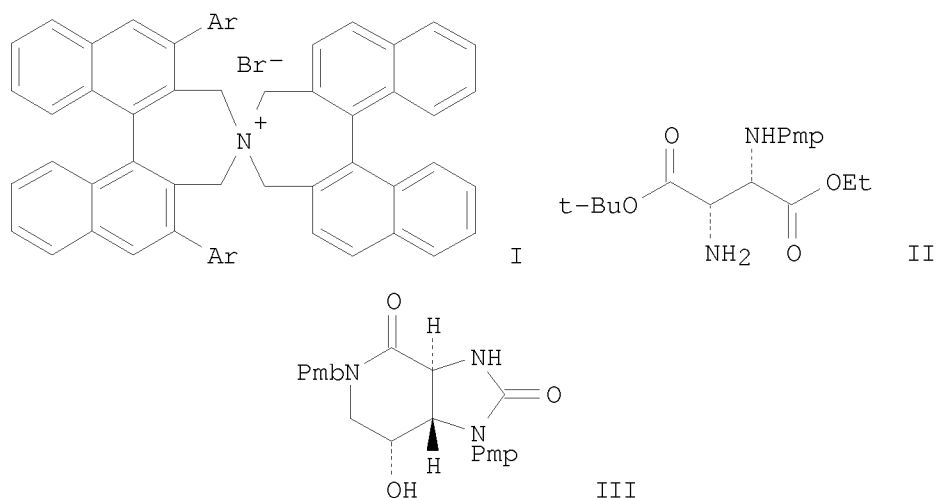
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 141:191014

GI



AB Mannich reaction of glycinate Schiff base  $\text{Ph}_2\text{C}:\text{NCH}_2\text{CO}_2\text{Bu-t}$  with  $\text{PmpN}:\text{CHCO}_2\text{Et}$  (Pmp = p-methoxyphenyl) has been accomplished with high enantioselectivity by the utilization of N-spiro C2-sym. quaternary ammonium bromide (R,R)-I [Ar = 3,5-bis(trifluoromethyl)phenyl, 3,4,5-trifluorophenyl, 3,5-bis(3,4,5-trifluorophenyl)phenyl] as a phase transfer catalyst. The product aminoaspartate II was obtained in 88% yield (82:18 ratio of syn:anti; 91% enantiomeric excess of syn product) with catalyst I (Ar = 3,4,5-trifluorophenyl). This methodol. enables the catalytic asym. synthesis of differentially protected 3-aminoaspartate, a nitrogen analog of dialkyl tartrate. II was converted in five steps into bicyclic hydroxy dione III (Pmb = p-methoxybenzyl), a precursor of streptolidine lactam.

IT 515137-97-0 736974-91-7

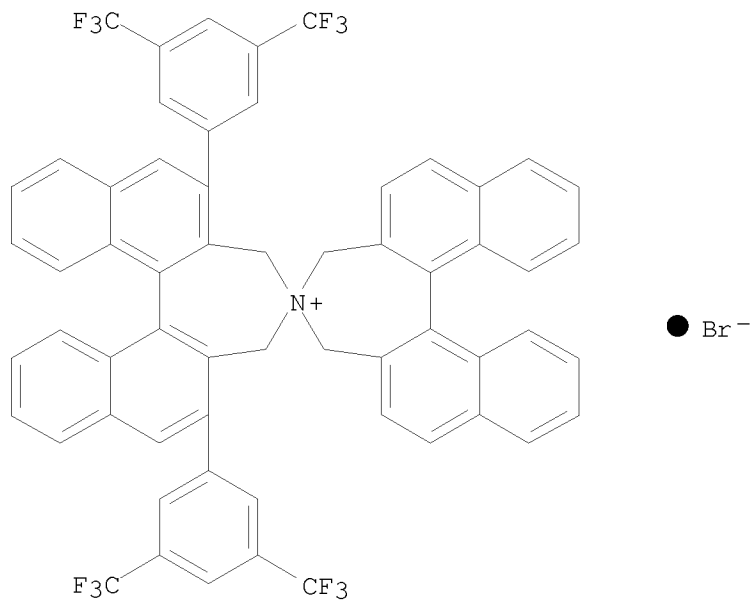
RL: CAT (Catalyst use); USES (Uses)

(asym. preparation of aminoaspartate by Mannich reaction of glycinate Schiff base with an iminoacetate in presence of chiral ammonium phase transfer catalysts)

RN 515137-97-0 CAPLUS

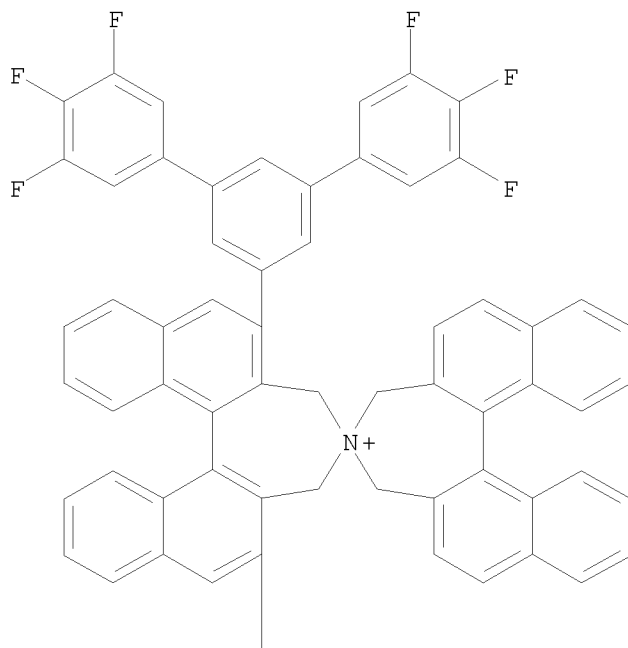
10/587,467

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide  
(1:1), (11bR,11'bR)- (CA INDEX NAME)

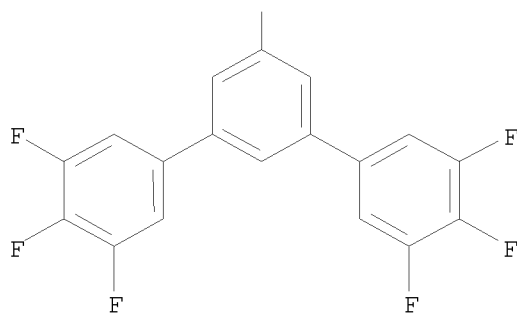


RN 736974-91-7 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,3'',4,4'',5,5''-hexafluoro[1,1':3',1''-terphenyl]-5'-yl)-  
3,3',5,5'-tetrahydro-, bromide, (11bR,11'bR)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



OS.CITING REF COUNT:	69	THERE ARE 69 CAPLUS RECORDS THAT CITE THIS RECORD (70 CITINGS)
REFERENCE COUNT:	28	THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 33 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:400619 CAPLUS

DOCUMENT NUMBER: 141:140245

TITLE: Design of New Chiral Phase-Transfer Catalysts with Dual Functions for Highly Enantioselective Epoxidation of  $\alpha,\beta$ -Unsaturated Ketones

AUTHOR(S): Ooi, Takashi; Ohara, Daisuke; Tamura, Masazumi; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan

SOURCE: Journal of the American Chemical Society (2004), 126(22), 6844-6845

CODEN: JACSAT; ISSN: 0002-7863

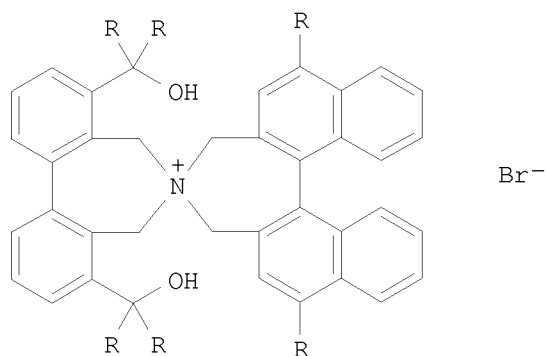
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 141:140245

GI



AB A new chiral ammonium bromide I ( $R = 3,5\text{-Ph}_2\text{C}_6\text{H}_3$ ), possessing diarylmethanol functionality as a substrate recognition site, has been designed as a promising, dual-functioning catalyst for the highly enantioselective epoxidn. of  $\alpha,\beta$ -unsatd. ketones under mild phase-transfer conditions. For instance, vigorous stirring of a mixture of chalcone, I (3 mol %), and 13% NaOCl in toluene at  $0^\circ$  for 24 h gave epoxy chalcone quant. with 96% ee. A variety of  $\alpha,\beta$ -unsatd. ketones can also be epoxidized with rigorous stereochem. control, clearly demonstrating the effectiveness and utility of the present system. Further, a successful single-crystal X-ray diffraction anal. of hexafluorophosphate analog of I uncovered its distinctive three-dimensional mol. architecture and provided useful information for postulating the transition state.

IT 727712-95-0P 727712-96-1P 727712-97-2P  
 727712-98-3P 727712-99-4P 727713-00-0P  
 727713-02-2P 727713-03-3P 727713-04-4P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);

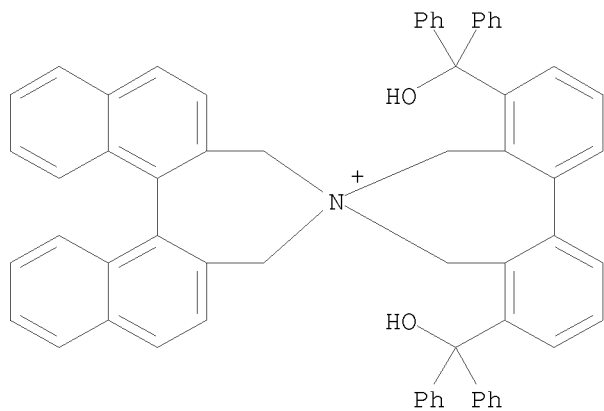
USES (Uses)

(asym. epoxidn. of  $\alpha,\beta$ -unsatd. ketones using chiral quaternary ammonium bromides as phase-transfer catalysts with dual functions)

10/587,467

RN 727712-95-0 CAPLUS

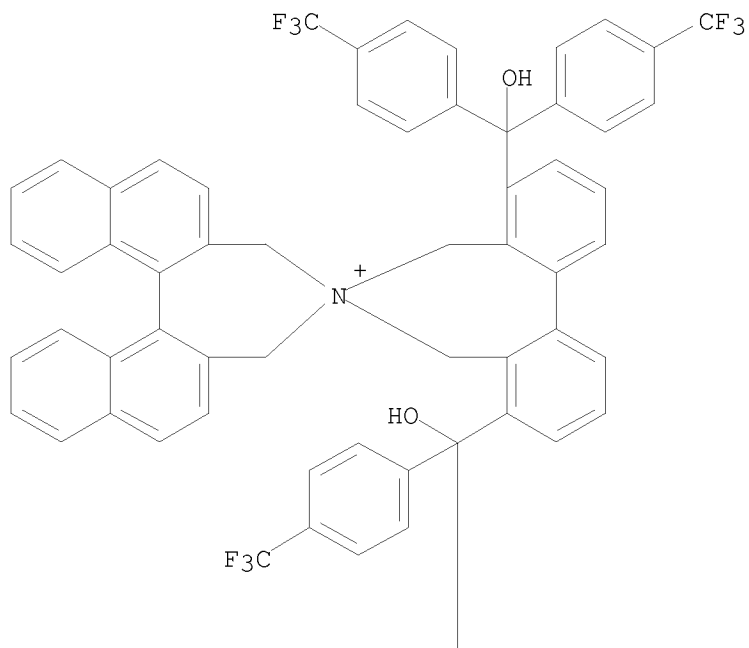
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-4,8-bis(hydroxydiphenylmethyl)-, bromide,  
(11aR,11'bS)- (9CI) (CA INDEX NAME)



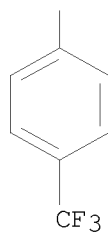
RN 727712-96-1 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-4,8-bis[hydroxybis[4-(trifluoromethyl)phenyl]methyl]-  
, bromide, (11aR,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A

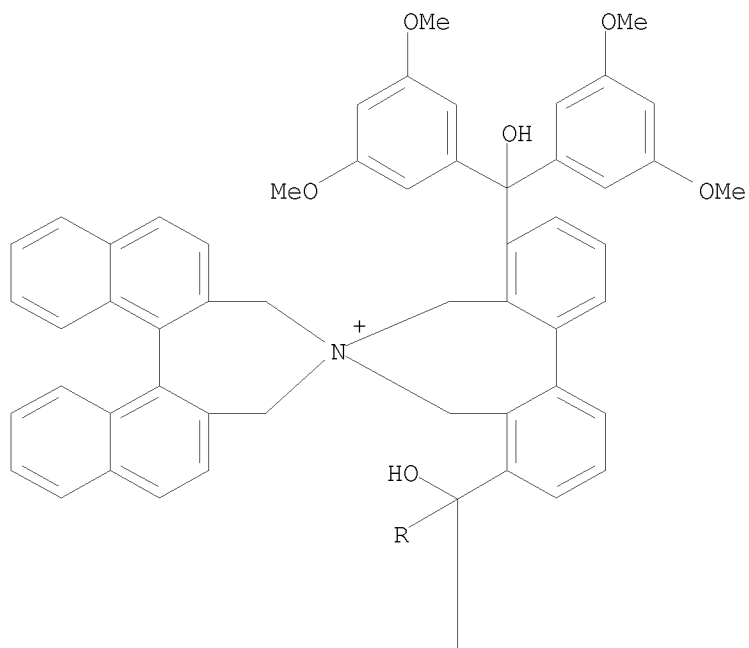


PAGE 2-A

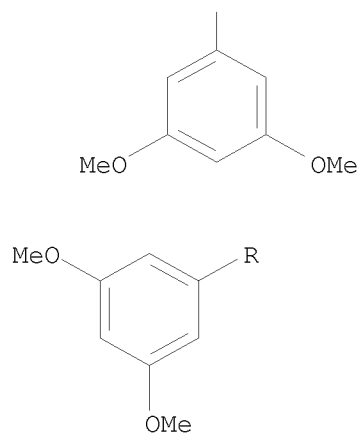


RN 727712-97-2 CAPLUS  
 CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 4,8-bis[bis(3,5-dimethoxyphenyl)hydroxymethyl]-3',5,5',7-tetrahydro-,  
 bromide, (11aR,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A



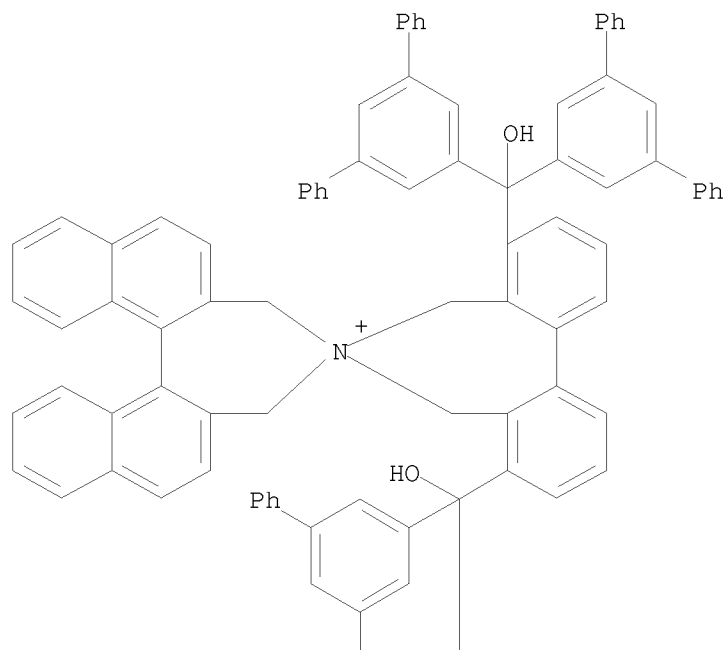
PAGE 2-A



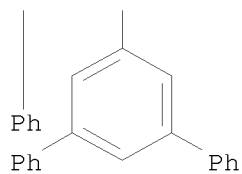
RN 727712-98-3 CAPLUS  
 CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 3',5,5',7-tetrahydro-4,8-bis[hydroxybis([1,1':3',1''-terphenyl]-5'-  
 yl)methyl]-, bromide, (11aR,11'bS)- (9CI) (CA INDEX NAME)



PAGE 1-A

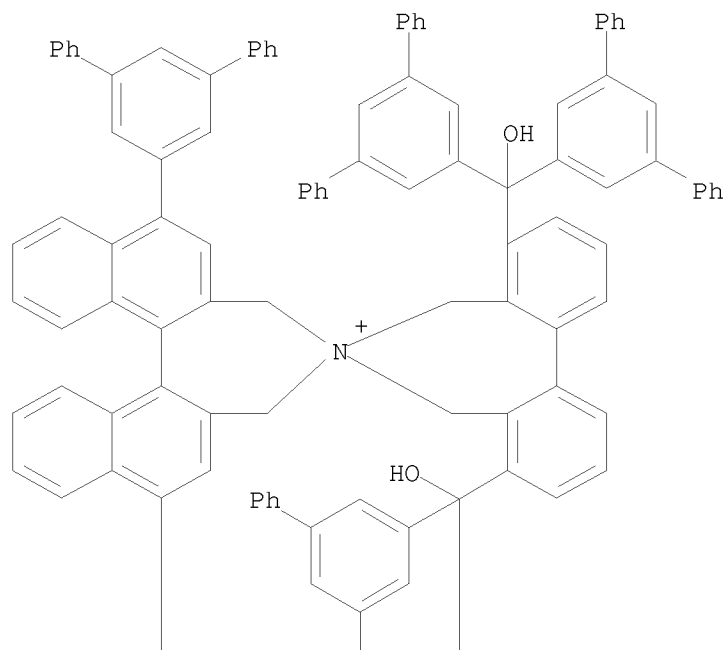


PAGE 2-A

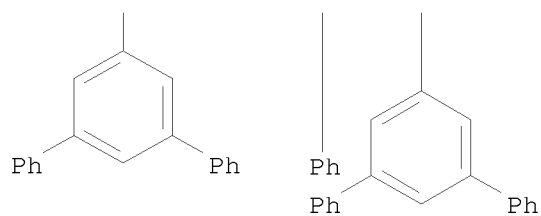


RN 727712-99-4 CAPLUS  
 CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 3',5,5',7-tetrahydro-4,8-bis[hydroxybis([1,1':3',1''-terphenyl]-5'-  
 yl)methyl]-1',7'-bis([1,1':3',1''-terphenyl]-5'-yl)-, bromide,  
 (11aR,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A

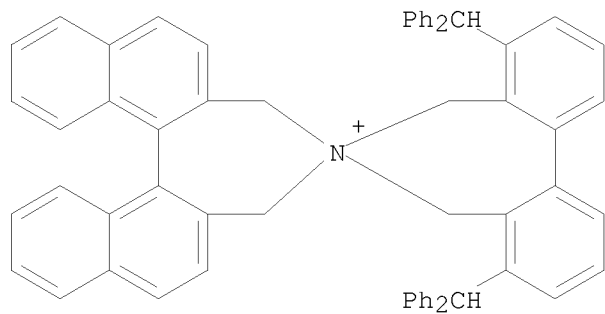


PAGE 2-A

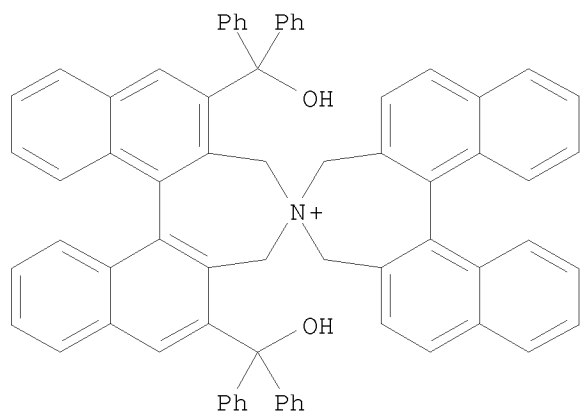


RN 727713-00-0 CAPLUS  
 CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 4,8-bis(diphenylmethyl)-3',5,5',7-tetrahydro-, bromide, (11'bS)- (9CI)  
 (CA INDEX NAME)

10/587,467

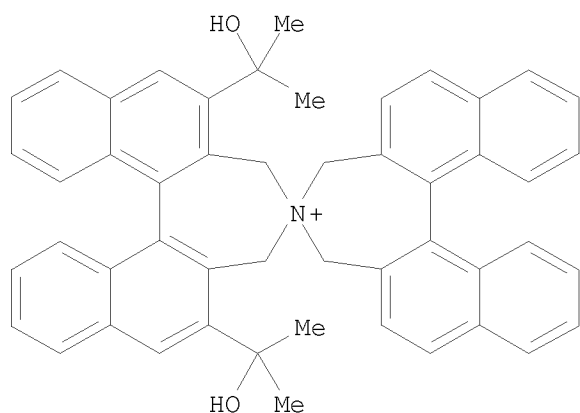


RN 727713-02-2 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis(hydroxydiphenylmethyl)-, bromide,  
(11bR,11'bS)- (9CI) (CA INDEX NAME)



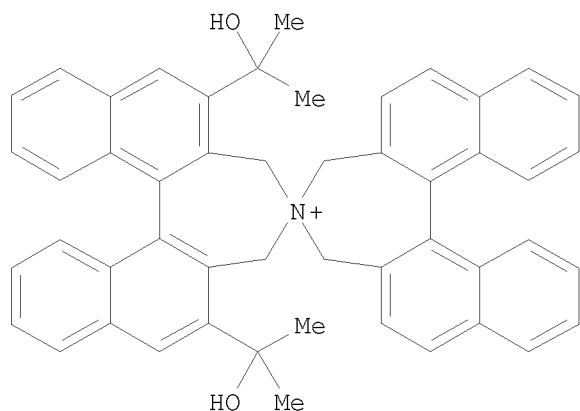
RN 727713-03-3 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis(1-hydroxy-1-methylethyl)-, bromide,  
(11bR,11'bS)- (9CI) (CA INDEX NAME)

10/587,467



● Br<sup>-</sup>

RN 727713-04-4 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis(1-hydroxy-1-methylethyl)-, bromide,  
 (11bS,11'bs)- (9CI) (CA INDEX NAME)



● Br<sup>-</sup>

IT 727713-21-5P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (crystal structure; asym. epoxidn. of  $\alpha,\beta$ -unsatd. ketones  
 using chiral quaternary ammonium bromides as phase-transfer catalysts  
 with dual functions)  
 RN 727713-21-5 CAPLUS  
 CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 3',5,5',7-tetrahydro-4,8-bis[hydroxybis([1,1':3',1''-terphenyl]-5'-

10/587,467

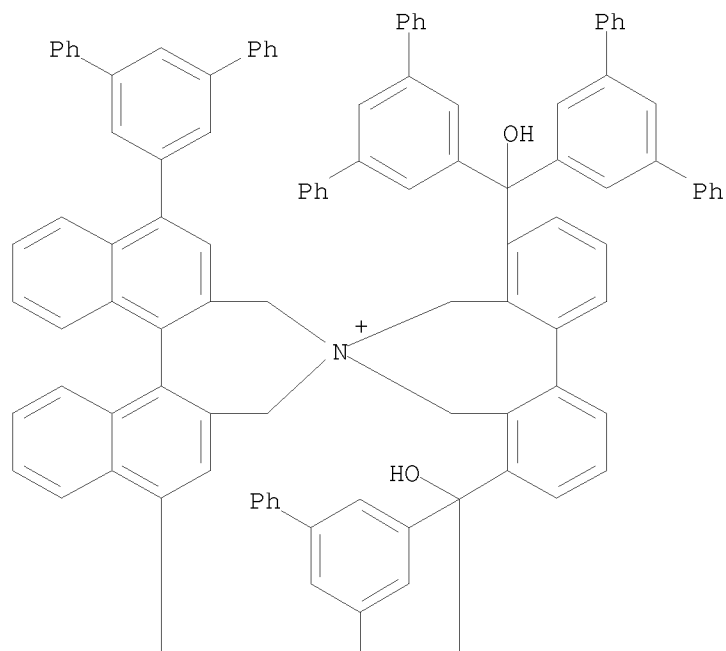
yl)methyl]-1',7'-bis([1,1':3',1''-terphenyl]-5'-yl)-, (11aR,11'bS)-, hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

CM 1

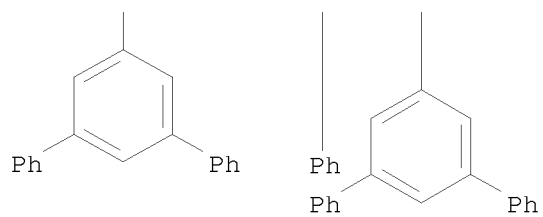
CRN 727713-20-4

CMF C146 H104 N O2

PAGE 1-A



PAGE 2-A



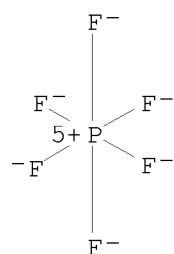
CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS

10/587,467



OS.CITING REF COUNT:	77	THERE ARE 77 CAPLUS RECORDS THAT CITE THIS RECORD (79 CITINGS)
REFERENCE COUNT:	21	THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 34 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:356397 CAPLUS

DOCUMENT NUMBER: 141:123890

TITLE: Stereoselective terminal functionalization of small peptides for catalytic asymmetric synthesis of unnatural peptides

AUTHOR(S): Maruoka, Keiji; Tayama, Eiji; Ooi, Takashi

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan

SOURCE: Proceedings of the National Academy of Sciences of the United States of America (2004), 101(16), 5824-5829

CODEN: PNASA6; ISSN: 0027-8424

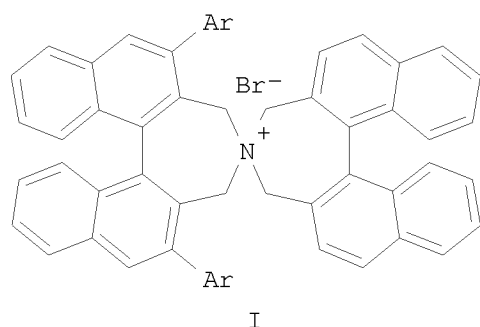
PUBLISHER: National Academy of Sciences

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 141:123890

GI



AB The asym. phase-transfer catalytic alkylation of peptides has been achieved by the use of designed C2-sym. chiral quaternary ammonium bromides (S,S)- and (R,R)-I [Ar = 2-naphthyl, 3,4,5-trifluorophenyl, 3,5-di-tert-butylphenyl, 3,5-bis(3,5-di-tert-butylphenyl)phenyl] as catalysts. Excellent stereoselectivities were uniformly observed in the alkylation with a variety of alkyl halides and the efficiency of the transmission of stereochem. information was not affected by the side-chain structure of the preexisting amino acid residues. This method also enables an asym. construction of noncoded  $\alpha,\alpha$ -dialkyl- $\alpha$ -amino acid residues at the peptide terminal. Since this chirality can be efficiently transferred to the adjacent amino acid moiety, our approach provides a general procedure not only for the highly stereoselective terminal functionalization of peptides but also for the sequential asym. construction of unnatural oligopeptides, which should play a vital role in the peptide-based drug discovery process.

IT 466679-91-4 501934-20-9 501934-21-0

534576-68-6 724425-22-3

RL: CAT (Catalyst use); USES (Uses)

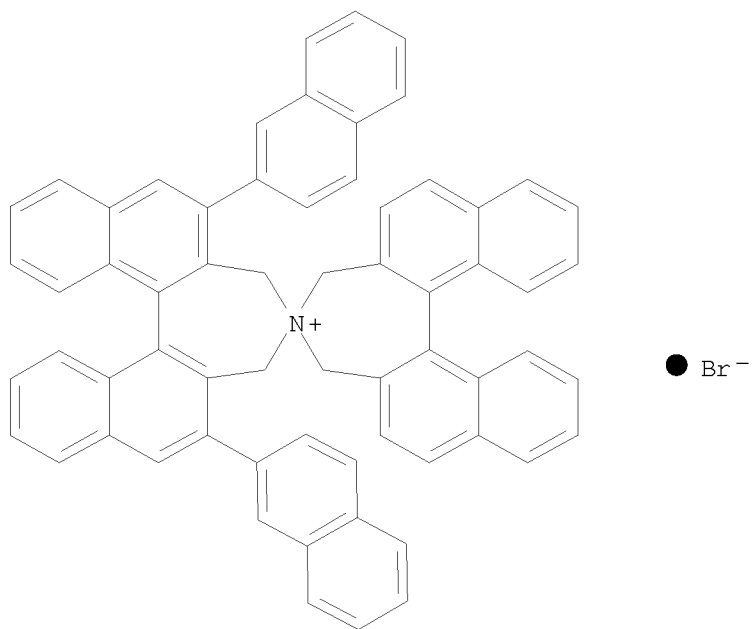
(asym. phase-transfer catalytic alkylation of peptides using designed C2-sym. chiral quaternary ammonium bromides)

RN 466679-91-4 CAPLUS

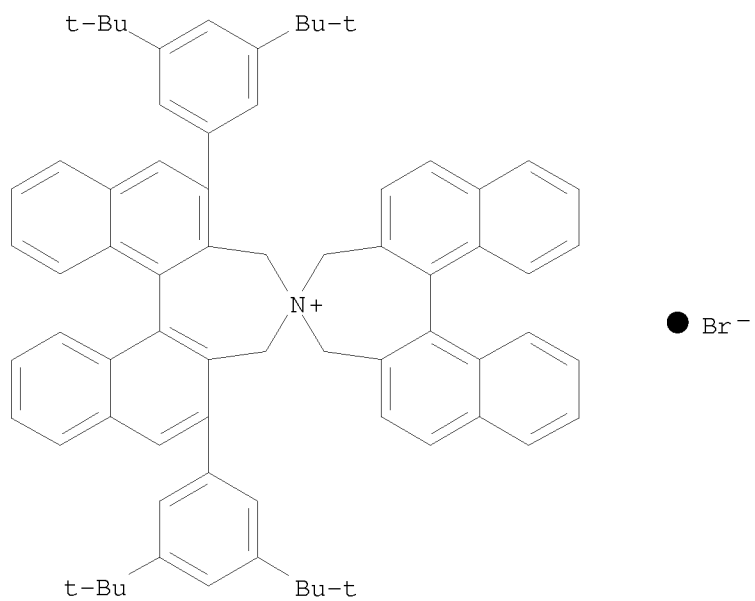
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium], 3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, bromide, (11bR,11'bR)- (9CI)

10/587,467

(CA INDEX NAME)



RN 501934-20-9 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide  
(1:1), (11bS,11'bS)- (CA INDEX NAME)

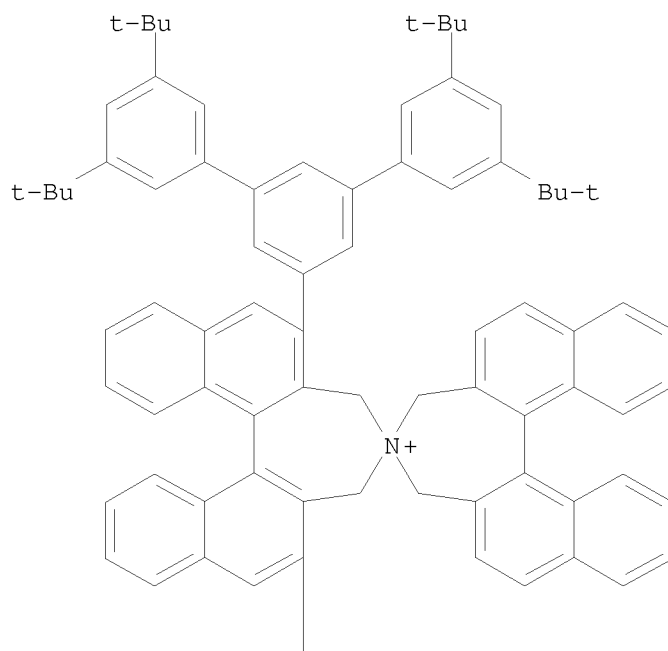


RN 501934-21-0 CAPLUS

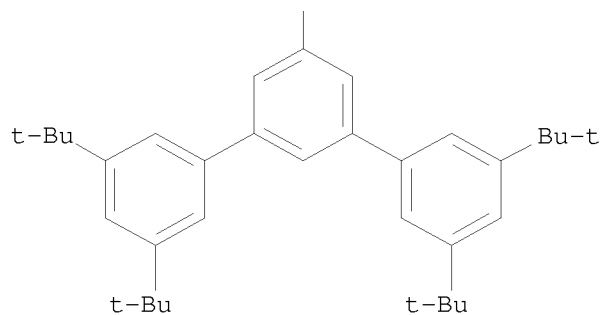


CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-  
dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide (1:1),  
(11bS,11'bS)- (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

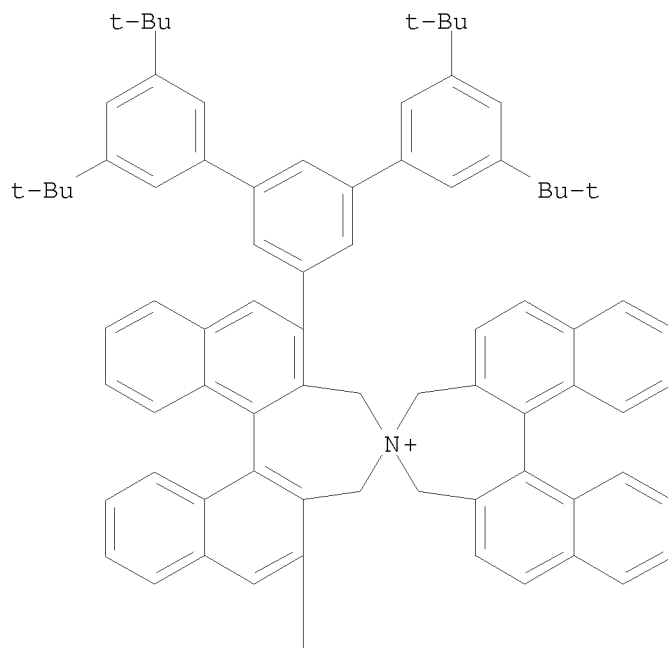


RN 534576-68-6 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-  
dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide, (11bR,11'bR)-

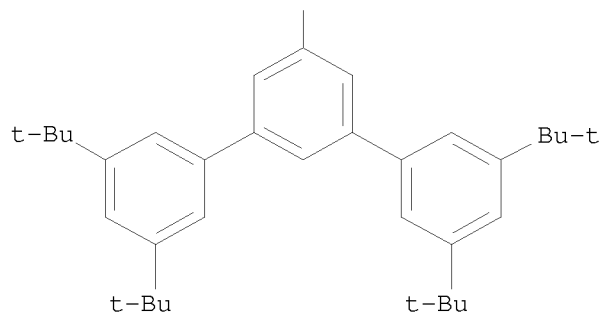
10/587,467

(9CI) (CA INDEX NAME)

PAGE 1-A

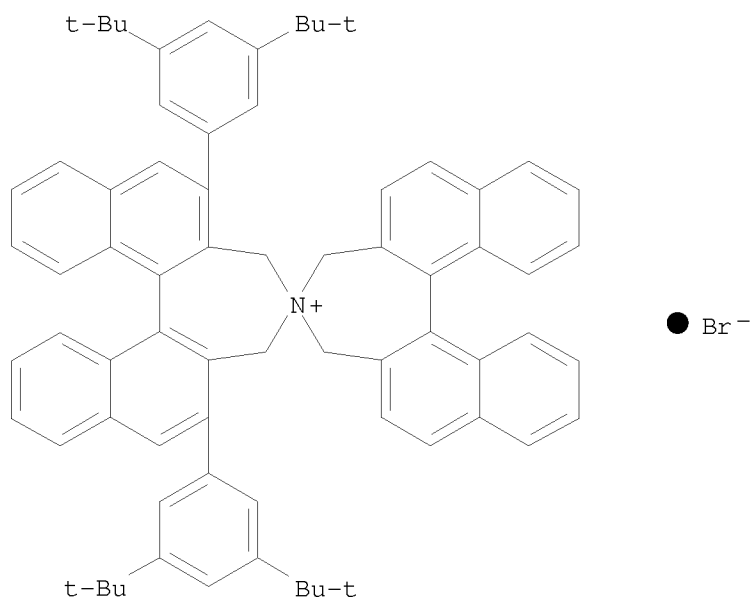


PAGE 2-A



RN 724425-22-3 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT:	15	THERE ARE 15 CAPLUS RECORDS THAT CITE THIS RECORD (15 CITINGS)
REFERENCE COUNT:	36	THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 35 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:351640 CAPLUS

DOCUMENT NUMBER: 140:357222

TITLE: Preparation of 3,3'-disubstituted  
2,2'-bis(alkoxycarbonyl)-1,1'-binaphthyl and N-spiro  
quaternary ammonium salts having axial chirality for  
phase transfer catalysts

INVENTOR(S): Maruoka, Keiji

PATENT ASSIGNEE(S): Nagase Sangyo K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 30 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

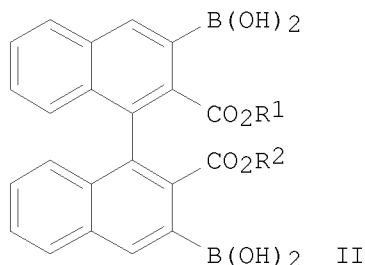
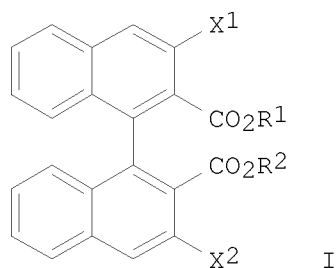
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
JP 2004131447	A	20040430	JP 2002-299317	20021011
PRIORITY APPLN. INFO.:			JP 2002-299317	20021011
OTHER SOURCE(S):	MARPAT	140:357222		

GI



AB N-spiro quaternary ammonium salts, useful as phase transfer catalysts (no data), are prepared by reaction of binaphthyls I (X1, X2 = group reactive with boronic acids; R1, R2 = C1-4 alkyl) with  $\geq 1$  compds. selected from ArB(OH)<sub>2</sub> [Ar = C1-4 alkyl-, C1-4 alkoxy-, halo-, or aromatic hydrocarbyl-(un)substituted aryl, C1-4 alkyl-, C1-4 alkoxy-, halo-, or aromatic hydrocarbyl-(un)substituted heteroaryl, etc.], substitution of alkoxycarbonyl groups in the resulting compds. with halogenomethyl groups, and reaction with (S)- or (R)-1,2-dihydro-7H-dinaphtho[2,1-c:1',2'-e]azepine. N-spiro quaternary ammonium salts are also prepared from binaphthyls II (R1, R2 = C1-4 alkyl) with  $\geq 1$  compds. selected from ArX (Ar = same as above; X = iodide, Br, Cl, F3CSO<sub>3</sub>).

(S)-3,3'-dibromo-2,2'-bis(isopropoxycarbonyl)-1,1'-binaphthyl [prepared from (S)-2,2'-bis(isopropoxycarbonyl)-1,1'-binaphthyl] was reacted with 3,5-dimethylphenylboronic acid in the presence of palladium acetate, Ph<sub>3</sub>P, and NaHCO<sub>3</sub> in 1,2-Dimethoxyethane-H<sub>2</sub>O under reflux for 20 h, treated with LiAlH<sub>4</sub> in THF at room temperature for 4 h, and brominated with PBr<sub>3</sub> in THF at room temperature for 1 h to give (S)-2,2'-bis(dibromomethyl)-3,3'-bis(3,5-dimethylphenyl)-1,1'-binaphthyl, which was treated with

(S)-1,2-dihydro-7H-dinaphtho[2,1-c:1',2'-e]azepine in the presence of K<sub>2</sub>CO<sub>3</sub> in acetonitrile under reflux for 6 h to give 96% corresponding N-spiro quaternary ammonium salt.

IT 561054-89-5P

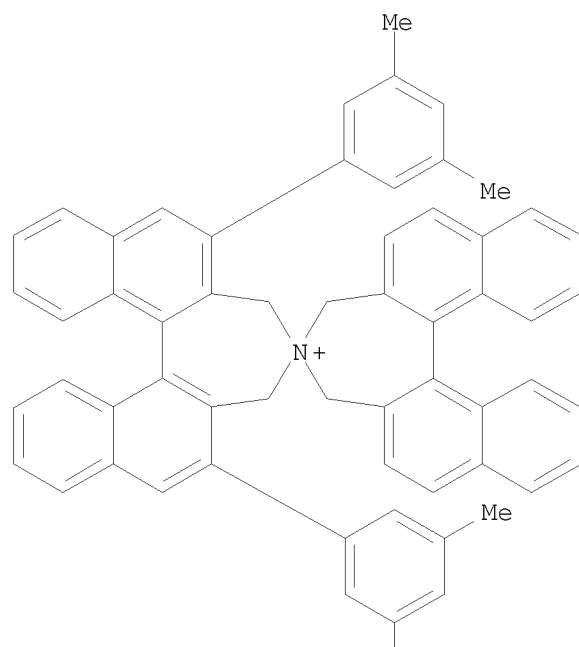
RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of N-spiro quaternary ammonium salts by reaction of binaphthyls with boronic acids, halomethylation, and reaction with dihydrodinaphthoazepine)

RN 561054-89-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,5-dimethylphenyl)-3,3',5,5'-tetrahydro-, bromide, (11bS,11'bS)-  
(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

Me

● Br<sup>-</sup>

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD  
(1 CITINGS)

L29 ANSWER 36 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:304173 CAPLUS

DOCUMENT NUMBER: 141:54590

TITLE: Design of new polyamine-based chiral phase-transfer catalysts for the enantioselective synthesis of phenylalanine

AUTHOR(S): Kano, Taichi; Konishi, Shunsuke; Shirakawa, Seiji; Maruoka, Keiji

CORPORATE SOURCE: Graduate School of Science, Department of Chemistry, Kyoto University, Sakyo, Kyoto, 606-8502, Japan

SOURCE: Tetrahedron: Asymmetry (2004), 15(8), 1243-1245

CODEN: TASYE3; ISSN: 0957-4166

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 141:54590

AB Enantiomerically enriched phenylalanine was synthesized by asym. benzylation of a glycine Schiff base using polyamine-based chiral phase-transfer catalysts.

IT 708270-21-7P 708270-22-8P 708270-23-9P

708270-24-0P 708270-25-1P 708270-26-2P

708270-27-3P 708270-28-4P 708270-29-5P

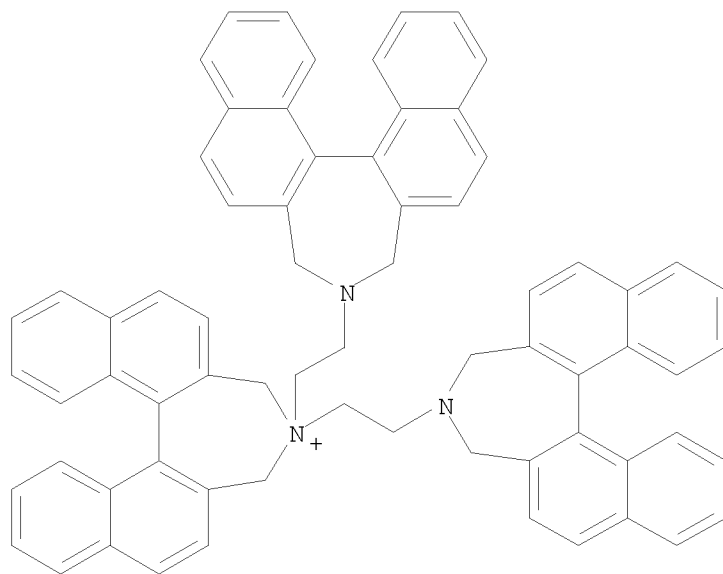
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of binaphthyl chiral amines as phase-transfer catalysts for asym. benzylation of glycinate Schiff base)

RN 708270-21-7 CAPLUS

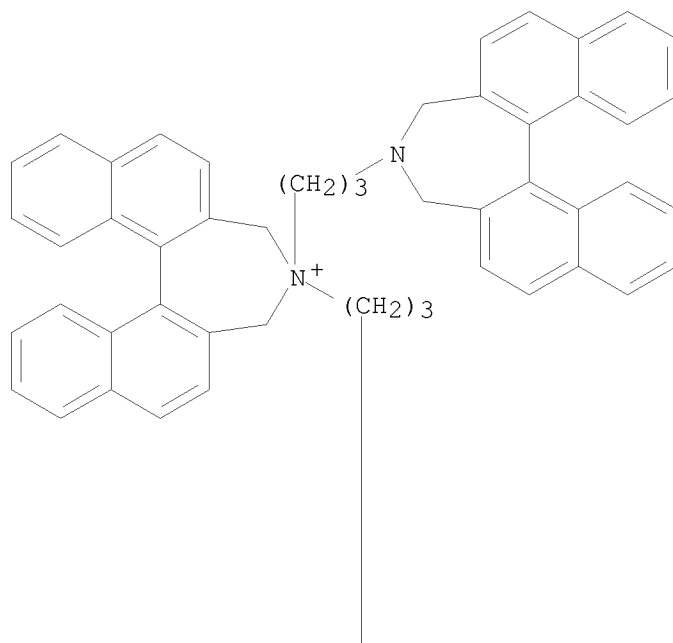
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-bis[2-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]ethyl]-  
4,5-dihydro-, bromide, (11bS)- (9CI) (CA INDEX NAME)

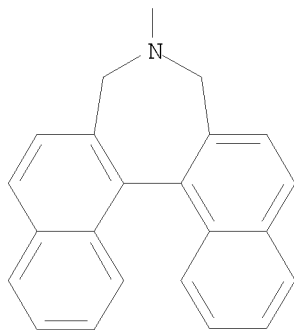
PAGE 1-A



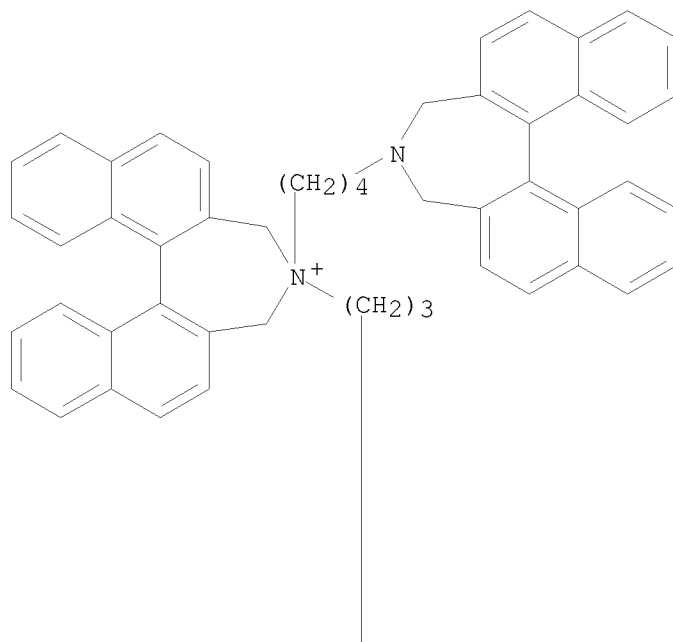


RN 708270-22-8 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-bis[3-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]propyl]-4,5-dihydro-, bromide, (11bS)- (9CI) (CA INDEX NAME)

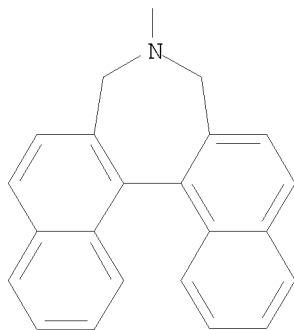




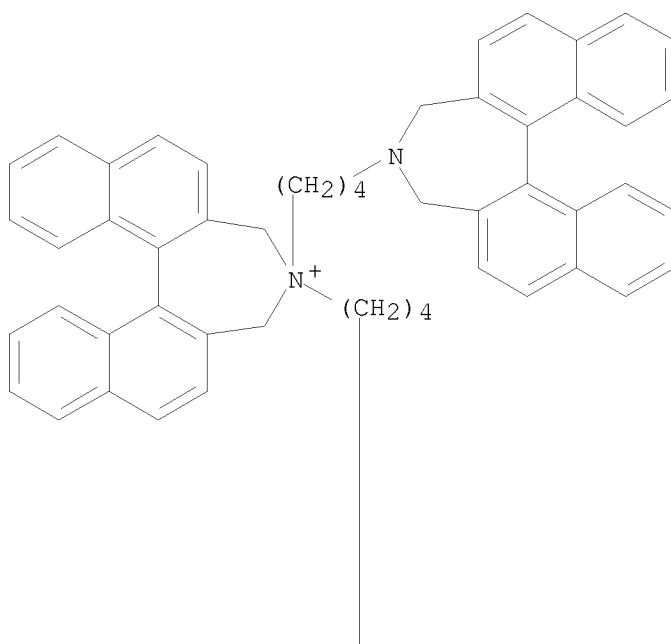
RN 708270-23-9 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4-[4-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]butyl]-4-[3-  
 [(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]propyl]-4,5-  
 dihydro-, bromide, (11bS)- (9CI) (CA INDEX NAME)

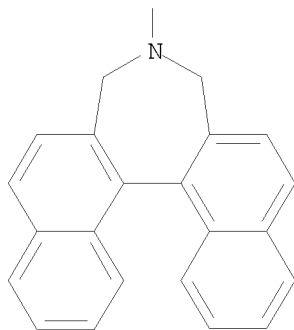




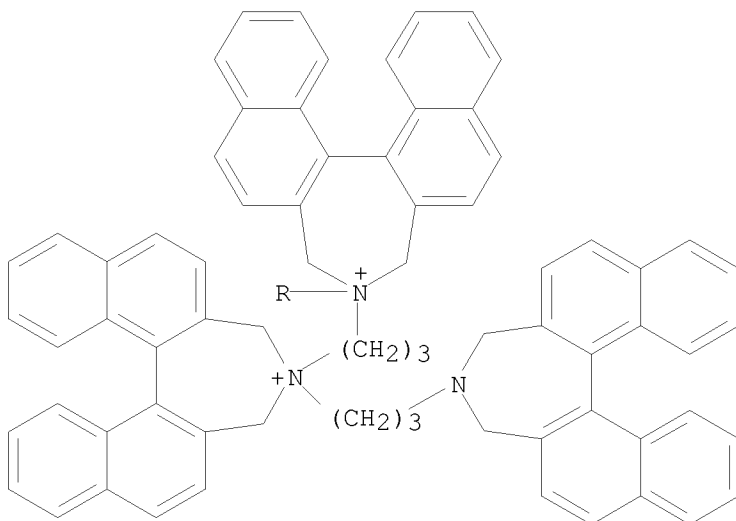


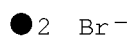
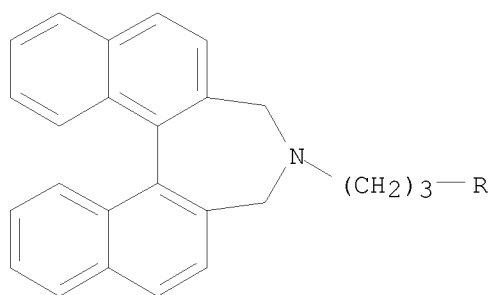
RN 708270-24-0 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4,4-bis[4-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]butyl]-  
 4,5-dihydro-, bromide, (11bS)- (9CI) (CA INDEX NAME)



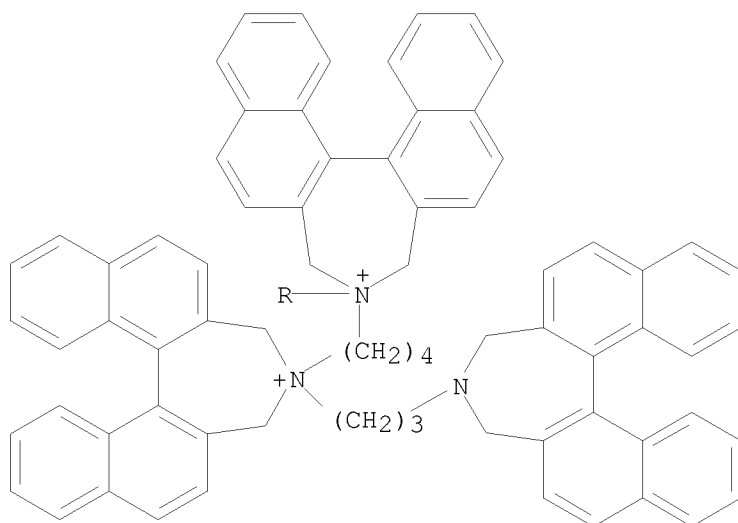


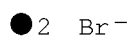
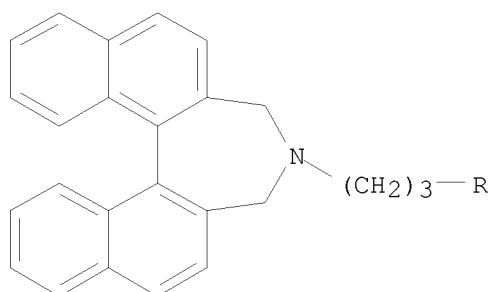
RN 708270-25-1 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4,4'-(1,3-propanediyl)bis[4-[3-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-  
 e]azepin-4-yl]propyl]-4,5-dihydro-, dibromide, (11bS,11'bS)- (9CI) (CA  
 INDEX NAME)





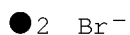
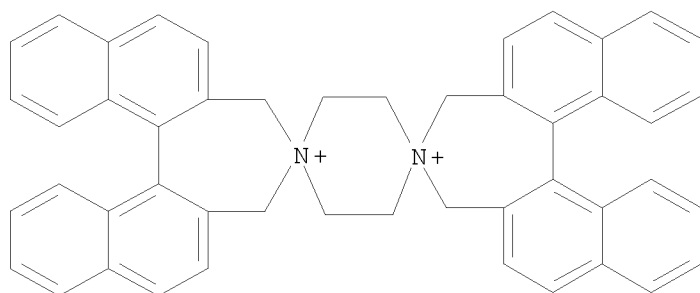
RN 708270-26-2 CAPLUS  
 CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
 4,4'-(1,4-butanediyl)bis[4-[3-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-  
 e]azepin-4-yl]propyl]-4,5-dihydro-, dibromide, (11bS,11'bS)- (9CI) (CA  
 INDEX NAME)





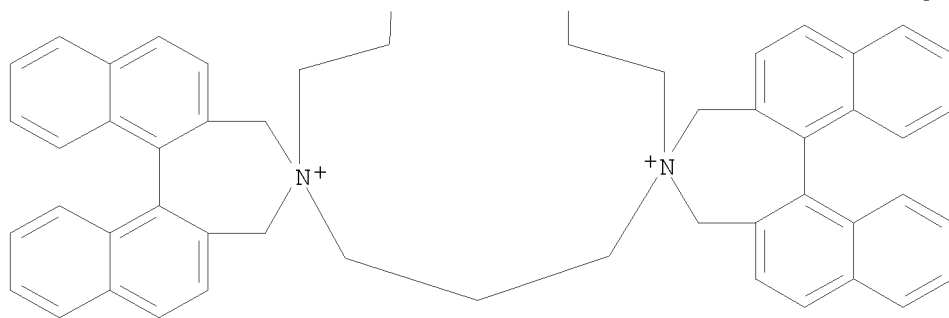
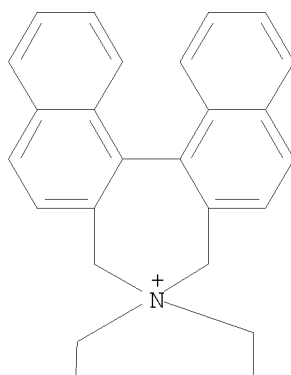
RN 708270-27-3 CAPLUS

CN Dispiro[4H-dinaphth[2,1-c:1',2'-e]azepinium-4,1'-piperazine-4',4''-[4H]dinaphth[2,1-c:1',2'-e]azepinium], 3,3'',5,5''-tetrahydro-, dibromide, (11bS,11''bS)- (9CI) (CA INDEX NAME)



RN 708270-28-4 CAPLUS

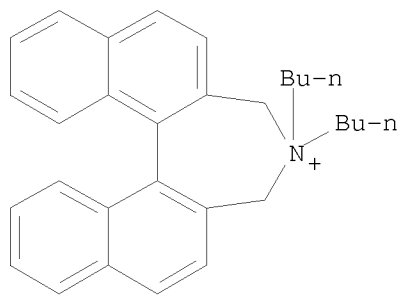
CN Trispiro[1,5,9-triazoniacyclododecane-1,4':5,4'':9,4'''-tris[4H]dinaphth[2,1-c:1',2'-e]azepinium], 3',3'',3''',5',5'',5'''-hexahydro-, tribromide, (11'bS,11''bS,11'''bS)- (9CI) (CA INDEX NAME)



● 3 Br<sup>-</sup>

RN 708270-29-5 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,4-dibutyl-4,5-dihydro-, bromide  
(1:1) (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT:	11	THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)
REFERENCE COUNT:	32	THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 37 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:1008280 CAPLUS

DOCUMENT NUMBER: 140:181131

TITLE: Practical asymmetric synthesis of vicinal diamines through the catalytic highly enantioselective alkylation of glycine amide derivatives

AUTHOR(S): Ooi, Takashi; Sakai, Daiki; Takeuchi, Mifune; Tayama, Eiji; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Sakyo, Kyoto, 606-8502, Japan

SOURCE: Angewandte Chemie, International Edition (2003), 42(47), 5868-5870

CODEN: ACIEF5; ISSN: 1433-7851

PUBLISHER: Wiley-VCH Verlag GmbH &amp; Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 140:181131

AB Phase-transfer catalysis (PTC) by a designer chiral quaternary ammonium bromide facilitated the direct, highly enantioselective introduction of a wide variety of substituents including cycloalkyl side chains at the  $\alpha$  position of a prochiral glycine amide derivative. A general, practical procedure for the asym. synthesis of structurally diverse monosubstituted vicinal diamines is presented.

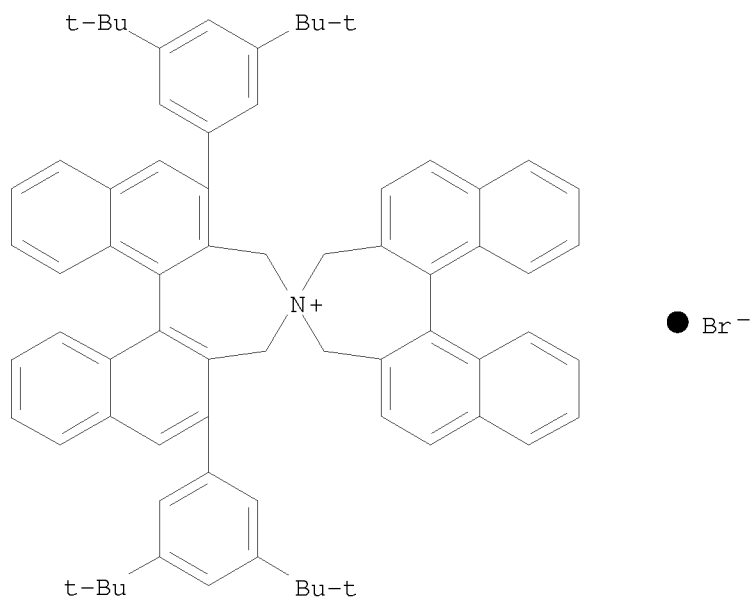
IT 501934-20-9 501934-21-0

RL: CAT (Catalyst use); USES (Uses)

(stereoselective preparation of vicinal diamines via enantioselective phase-transfer alkylation of corresponding glycine amide derivs. catalyzed by chiral quaternary ammonium bromides)

RN 501934-20-9 CAPLUS

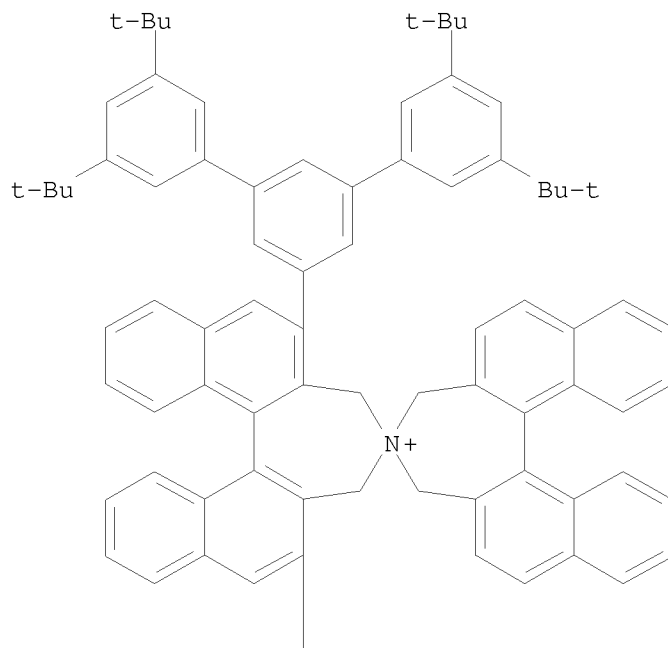
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide  
(1:1), (11bS,11'bS)- (CA INDEX NAME)



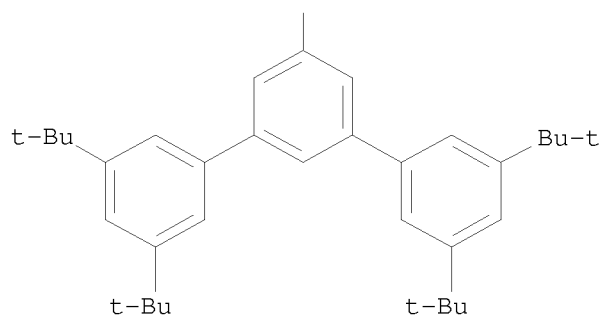
10/587,467

RN 501934-21-0 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-  
dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide (1:1),  
(11bS,11'bS)- (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



OS.CITING REF COUNT: 31 THERE ARE 31 CAPLUS RECORDS THAT CITE THIS  
RECORD (31 CITINGS)  
REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS



10/587,467

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 38 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:902361 CAPLUS

DOCUMENT NUMBER: 139:381745

TITLE: Diastereoselective and enantioselective preparation of  $\beta$ -hydroxyamino acid esters using axially asymmetric N-spiroquatertiary ammonium salts

INVENTOR(S): Maruoka, Keiji; Oi, Takashi

PATENT ASSIGNEE(S): Nagase and Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003327566	A	20031119	JP 2003-56980	20030304
JP 4217085	B2	20090128		
PRIORITY APPLN. INFO.:			JP 2002-63184	A 20020308
OTHER SOURCE(S):	MARPAT	139:381745		

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB HOCHR7CR3(NH2)CO2R4 [R3 = H, C1-6 (cyclo)alkyl, C2-6 (cyclo)alkenyl, C2-6 (cyclo)alkynyl, C6-10 aryl which may be substituted with C1-4 alkyl, C1-4 alkoxy, C2-4 alkenyl, C2-4 alkynyl, or halo, C1-6 heteroaryl which may be substituted with C1-4 alkyl, C2-6 alkynyl, or halo; R4 = C1-6 (cyclo)alkyl; R7 = H, C1-8 (cyclo)alkyl, C2-8 (cyclo)alkenyl, C6-10 aryl which may be substituted with C1-4 alkyl, halo, OH, or NO<sub>2</sub>, C1-9 heteroaryl which may be substituted with C1-4 alkyl, halo, OH, or NO<sub>2</sub>, C7-12 aralkyl], useful as chiral building blocks, are prepared by (1) treating R1R2C:NHR3CO2R4 (R1, R2 H, aryl which may be substituted with C1-4 alkyl, C1-4 alkoxy, C2-4 alkenyl, C2-4 alkynyl, or halo; R1 and/or R2 = group other than H; R3, R4 = same as above) with R7CHO (R7 = same as above) in a two-phase solvent system containing organic solvents and H<sub>2</sub>O in the presence of quaternary ammonium salts I [R5, R6 = H, C1-6 (halo)alkyl, C2-6 (halo)alkenyl, C2-6 (halo)alkynyl, (un)substituted aralkyl, (un)substituted heteroaralkyl, (un)substituted aryl, C1-3 alkoxy-carbonyl, N-C1-4 alkylcarbonyl; Ar1, Ar2 = (un)substituted aryl, heteroaryl (substituents are given); X- = halo, SCN-, HSO<sub>4</sub>-; Y, Z = H, halo, C1-4 alkyl, C1-3 alkoxy; Y and Z may be bonded together to represent direct bond] and (2) hydrolyzing the resulting Schiff bases. PhCH<sub>2</sub>CH<sub>2</sub>CHO was added dropwise to a mixture of a toluene solution of Ph<sub>2</sub>C:NCH<sub>2</sub>CO<sub>2</sub>CM<sub>3</sub> and (S,S)-II, and an aqueous NaOH solution at 0° and the reaction mixture was further stirred at 0° for 2 h to give 80% PhCH<sub>2</sub>CH<sub>2</sub>CH(OH)CH(NH<sub>2</sub>)CO<sub>2</sub>CM<sub>3</sub> with erythro (anti)/threo (syn) ratio 73:27.

IT 515137-97-0

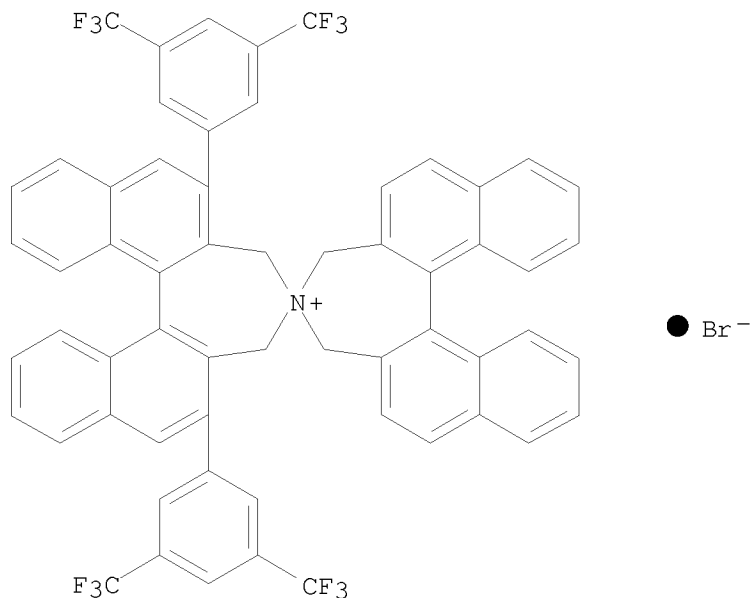
RL: CAT (Catalyst use); USES (Uses)

(diastereoselective and enantioselective preparation of  $\beta$ -hydroxyamino acid esters from Schiff bases of amino acid esters and aldehydes using axially asym. N-spiroquatertiary ammonium salts)

RN 515137-97-0 CAPLUS

10/587,467

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide  
(1:1), (11bR,11'bR)- (CA INDEX NAME)

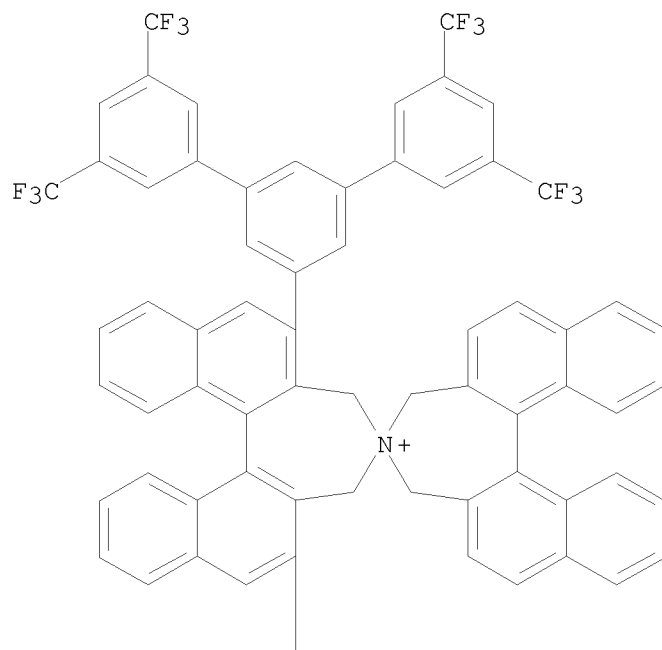


IT 515137-98-1P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
USES (Uses)  
(diastereoselective and enantioselective preparation of  $\beta$ -hydroxyamino  
acid esters from Schiff bases of amino acid esters and aldehydes using  
axially asym. N-spiroquaternary ammonium salts)

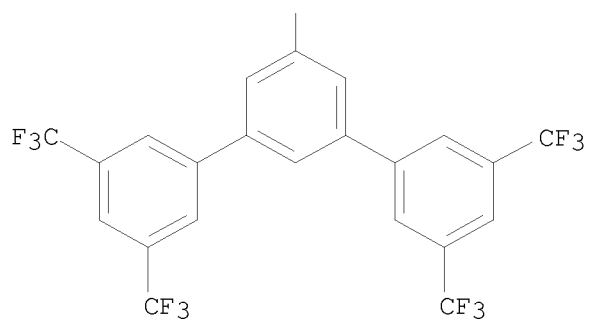
RN 515137-98-1 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)

PAGE 1-A



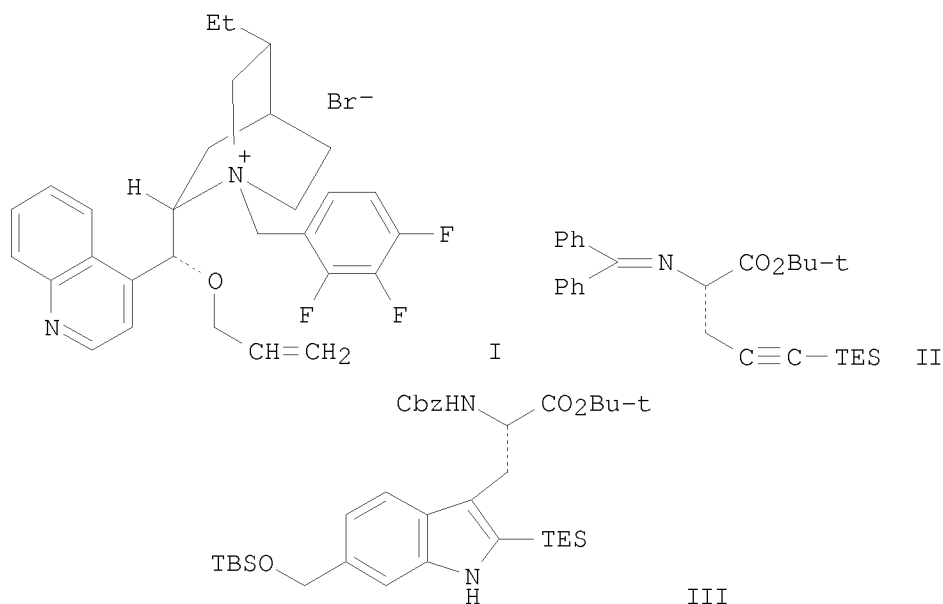
PAGE 2-A



OS.CITING REF COUNT: 1

THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD  
(1 CITINGS)

L29 ANSWER 39 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2003:679488 CAPLUS  
 DOCUMENT NUMBER: 139:323759  
 TITLE: Catalytic Asymmetric Synthesis of the Central  
 Tryptophan Residue of Celogentin C  
 AUTHOR(S): Castle, Steven L.; Srikanth, G. S. C.  
 CORPORATE SOURCE: Department of Chemistry and Biochemistry, Brigham  
 Young University, Provo, UT, 84602, USA  
 SOURCE: Organic Letters (2003), 5(20), 3611-3614  
 CODEN: ORLEF7; ISSN: 1523-7060  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 139:323759  
 GI



AB Chiral phase-transfer catalyst I containing an electron-deficient trifluorobenzyl moiety promoted the alkylation of glycinate  $\text{Ph}_2\text{C}:\text{NCH}_2\text{CO}_2\text{Bu-t}$  with propargyl bromide  $\text{BrCH}_2\text{C}(\text{O})\text{CTES}$  ( $\text{TES} = \text{SiEt}_3$ ) in good yield and excellent enantiomeric excess. The resulting propargyl glycine II was converted into tryptophan derivative III ( $\text{TBS} = \text{SiMe}_2\text{Bu-t}$ ) in two steps, with the Pd-catalyzed heteroannulation as the key transformation. This method promises to be an efficient route for the preparation of tryptophan derivs. possessing substitution on the indole ring.

IT 466679-91-4

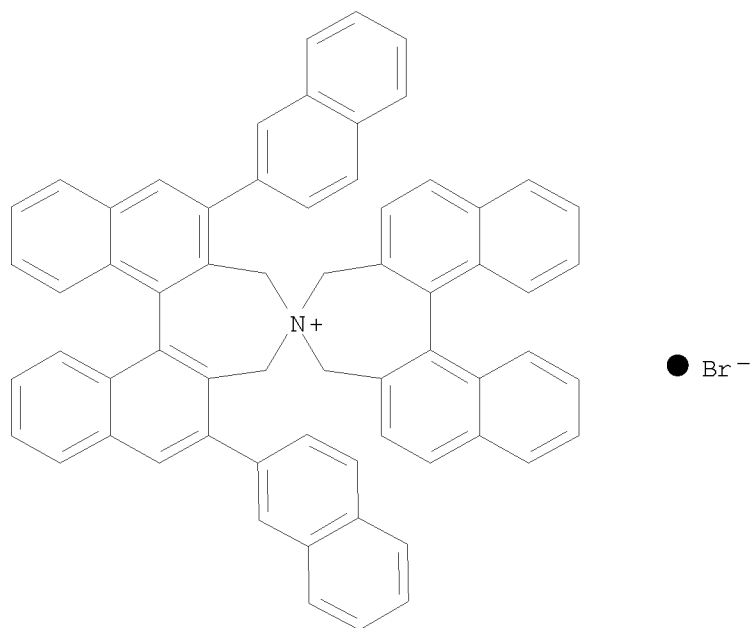
RL: CAT (Catalyst use); USES (Uses)

(preparation of Trp residue of celogentin C by using chiral phase transfer catalysts for asym. alkylation of a glycinate derivative)

RN 466679-91-4 CAPLUS

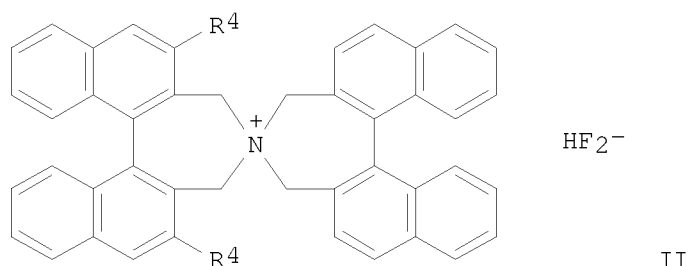
CN 4,4'-Spiro[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, bromide, (11bR,11'bR)- (9CI)  
 (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT:	34	THERE ARE 34 CAPLUS RECORDS THAT CITE THIS RECORD (34 CITINGS)
REFERENCE COUNT:	29	THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 40 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2003:509038 CAPLUS  
 DOCUMENT NUMBER: 139:197011  
 TITLE: Highly Enantioselective Michael Addition of Silyl Nitronates to  $\alpha,\beta$ -Unsaturated Aldehydes Catalyzed by Designer Chiral Ammonium Bifluorides: Efficient Access to Optically Active  $\gamma$ -Nitro Aldehydes and Their Enol Silyl Ethers  
 AUTHOR(S): Ooi, Takashi; Doda, Kanae; Maruoka, Keiji  
 CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan  
 SOURCE: Journal of the American Chemical Society (2003), 125(30), 9022-9023  
 CODEN: JACSAT; ISSN: 0002-7863  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 139:197011  
 GI



AB Highly enantioselective Michael addition of silyl nitronates  $R_1CH:N^+(O^-)OSiMe_3$  (I) ( $R_1 = Me, Et$ ) to  $\alpha,\beta$ -unsatd. aldehydes  $R_2CH:CR_3CHO$  [ $R_2 = Pr, Ph, R_3 = H, Me; R_2R_3 = (CH_2)_4$ ] in the presence of designer N-spiro C2-sym. chiral quaternary ammonium bifluoride II [ $R_4 = 3,5-(Me_3C)_2C_6H_3$ ] as a catalyst provided direct access to both optically active  $\gamma$ -nitro aldehydes  $R_1CH(NO_2)CHR_2CHR_3CHO$ , which are very useful precursors to various complex organic mols. including aminocarbonyls, and their enol silyl ethers  $R_1CH(NO_2)CHR_2CR_3:CHOSiMe_3$ . For instance, the reaction of I ( $R_1 = Me$ ) with trans-cinnamaldehyde in toluene in the presence of (R,R)-II (2 mol %) proceeded smoothly at  $-78^\circ$  to give the desired enol silyl ether  $MeCH(NO_2)CHPhCH:CHOSiMe_3$  (III) in 90% isolated yield (anti/syn = 83:17) with 97% ee (anti isomer), and simple treatment of III thus obtained with 1N HCl in THF at  $0^\circ$  afforded the corresponding  $\gamma$ -nitro aldehyde  $MeCH(NO_2)CHPhCH_2CHO$  quant. without loss of diastereo- and enantioselectivity.

IT 586344-86-7 586344-89-0  
 RL: CAT (Catalyst use); USES (Uses)  
 (asym. synthesis of  $\gamma$ -nitro aldehydes and their enol silyl ethers via Michael addition of silyl nitronates to  $\alpha,\beta$ -unsatd. aldehydes catalyzed by chiral ammonium bifluorides)

RN 586344-86-7 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],

10/587,467

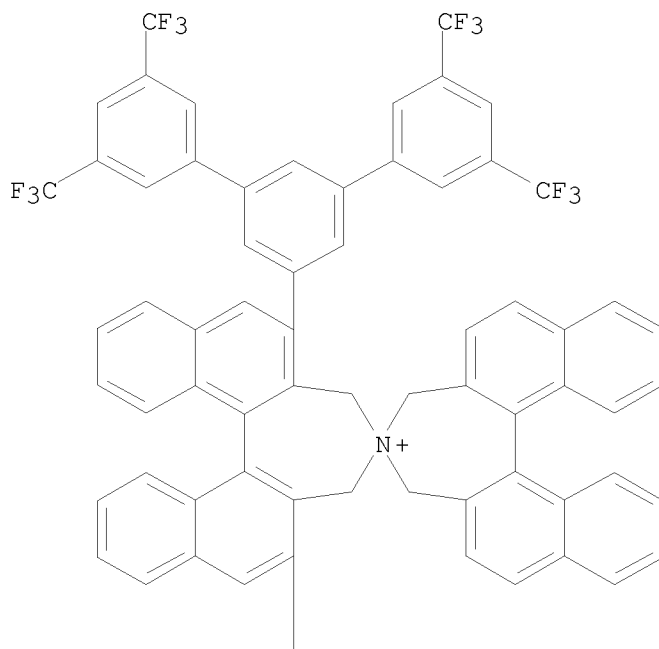
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bR,11'bR)-,  
(hydrogen difluoride) (1:1) (CA INDEX NAME)

CM 1

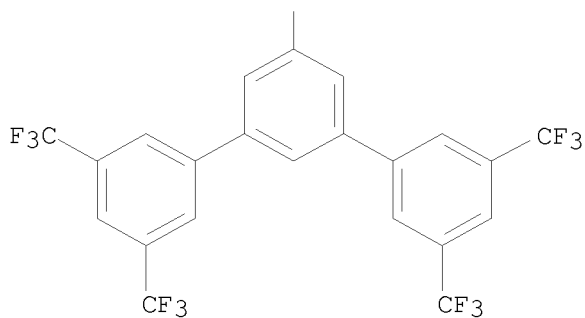
CRN 586344-85-6

CMF C88 H48 F24 N

PAGE 1-A



PAGE 2-A



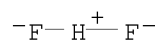
CM 2

CRN 18130-74-0



10/587,467

CMF F2 H



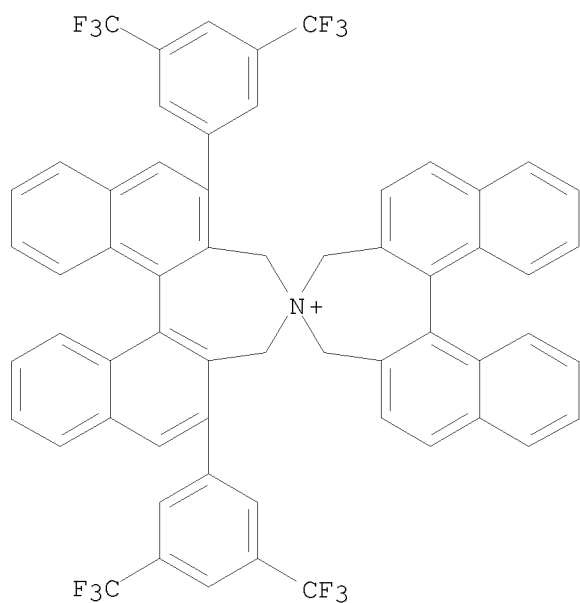
RN 586344-89-0 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)-, (hydrogen difluoride) (1:1) (CA INDEX NAME)

CM 1

CRN 586344-88-9

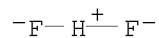
CMF C60 H36 F12 N



CM 2

CRN 18130-74-0

CMF F2 H



IT 586344-91-4P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
USES (Uses)

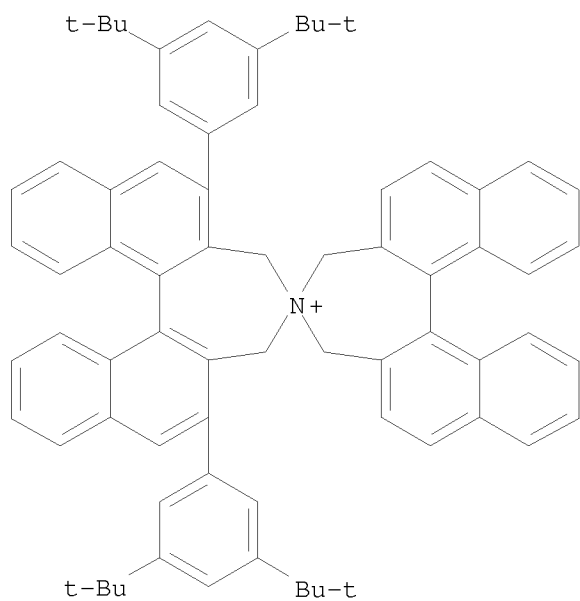
(asym. synthesis of  $\gamma$ -nitro aldehydes and their enol silyl ethers  
via Michael addition of silyl nitronates to  $\alpha,\beta$ -unsatd.

10/587,467

aldehydes catalyzed by chiral ammonium bifluorides)  
RN 586344-91-4 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)-, (hydrogen difluoride) (1:1) (CA INDEX NAME)

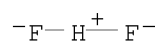
CM 1

CRN 586344-90-3  
CMF C72 H72 N



CM 2

CRN 18130-74-0  
CMF F2 H



OS.CITING REF COUNT: 50 THERE ARE 50 CAPLUS RECORDS THAT CITE THIS  
RECORD (51 CITINGS)  
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 41 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:442711 CAPLUS

DOCUMENT NUMBER: 139:246185

TITLE: Symmetrical 4,4',6,6'-tetraarylbinaphthyl-substituted ammonium bromide as a new, chiral phase-transfer catalyst

AUTHOR(S): Hashimoto, Takuya; Tanaka, Youhei; Maruoka, Keiji

CORPORATE SOURCE: Graduate School of Science, Department of Chemistry, Kyoto University, Kyoto, 606-8502, Japan

SOURCE: Tetrahedron: Asymmetry (2003), 14(12), 1599-1602

CODEN: TASYE3; ISSN: 0957-4166

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:246185

AB Binaphthyl-modified spiro-type sym. phase-transfer catalysts possessing 4,4',6,6'-tetraaryl substituents are shown to exhibit high asym. induction in asym. alkylation of benzophenone imine glycine tert-Bu ester under ordinary phase-transfer conditions.

IT 596107-91-4P 596107-92-5P 596107-93-6P

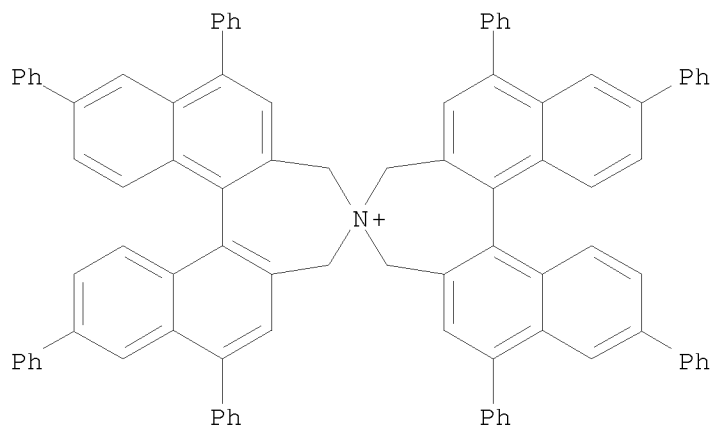
596107-94-7P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);

USES (Uses)

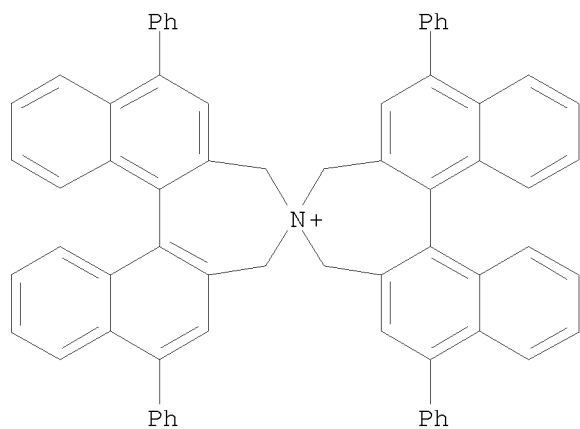
(preparation of tetraarylbinaphthyl-substituted ammonium bromides as chiral phase-transfer catalysts and their using for asym. alkylation of benzophenone imine glycine tert-Bu ester)

RN 596107-91-4 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octaphenyl-, bromide,  
(11bS,11'bS)- (9CI) (CA INDEX NAME)

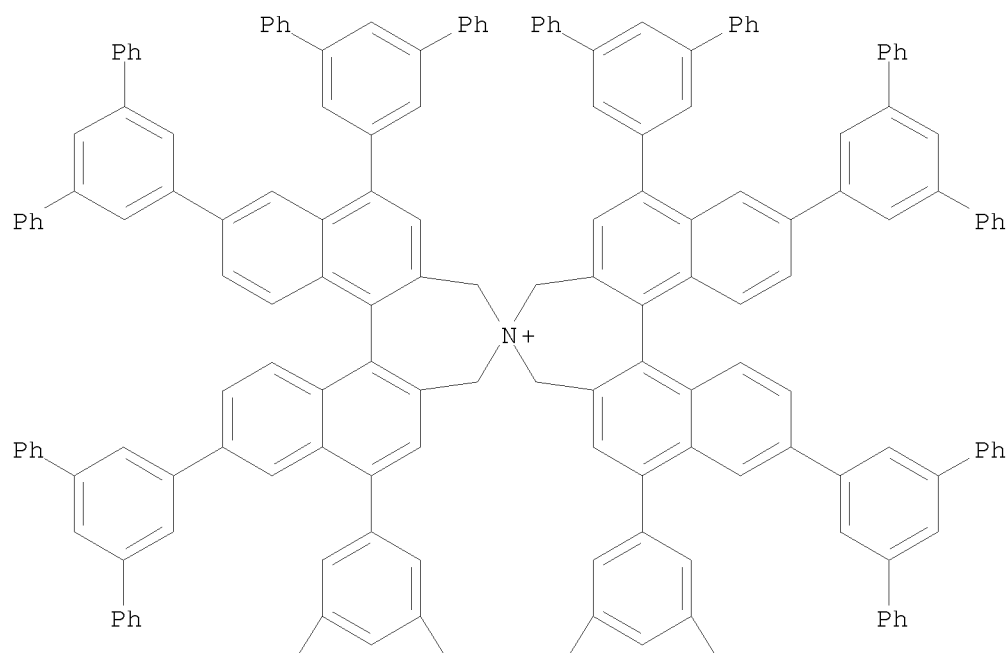
RN 596107-92-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7'-tetraphenyl-, bromide, (11bS,11'bS)- (9CI)  
(CA INDEX NAME)

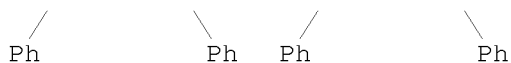


RN 596107-93-6 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octakis([1,1':3',1''-terphenyl]-  
 5'-yl)-, bromide, (11bS,11'bS)- (9CI) (CA INDEX NAME)

PAGE 1-A

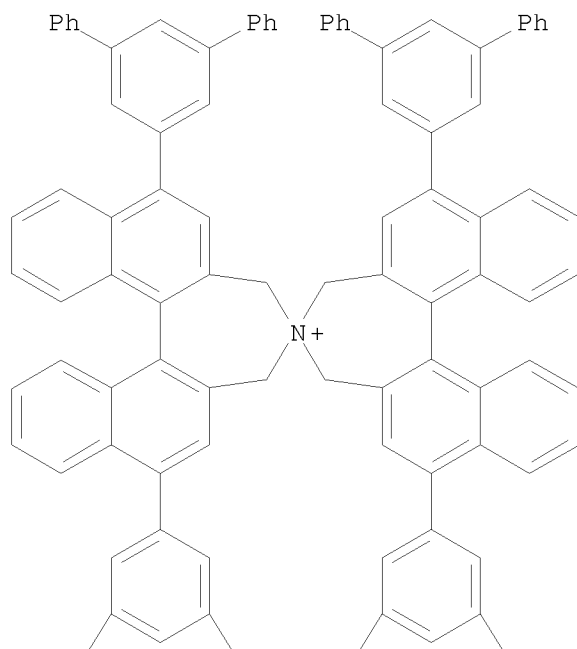


PAGE 2-A

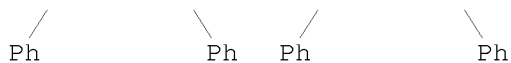


RN 596107-94-7 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-1,1',7,7'-tetrakis([1,1':3',1''-terphenyl]-5'-yl)-,  
 bromide, (11bS,11'bs)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



OS.CITING REF COUNT: 36 THERE ARE 36 CAPLUS RECORDS THAT CITE THIS  
 RECORD (36 CITINGS)  
 REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS

10/587,467

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 42 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:336128 CAPLUS

DOCUMENT NUMBER: 139:101015

TITLE: New, Improved Procedure for the Synthesis of Structurally Diverse N-Spiro C2-Symmetric Chiral Quaternary Ammonium Bromides

AUTHOR(S): Ooi, Takashi; Uematsu, Yukitaka; Maruoka, Keiji  
CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, JapanSOURCE: Journal of Organic Chemistry (2003), 68(11), 4576-4578  
CODEN: JOCEAH; ISSN: 0022-3263

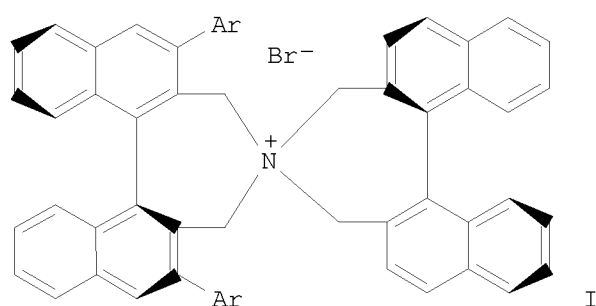
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:101015

GI



AB Selective, direct ortho magnesiation of (S)-2,2'-bis(isopropoxycarbonyl)-1,1'-binaphthyl has been achieved under mild conditions, using magnesium bis(2,2,6,6-tetramethylpiperamide) [Mg(TMP)<sub>2</sub>]. In combination with the subsequent reaction with the appropriate electrophiles, bromine and iodine, this method constitutes a key step in establishing a new and concise synthetic route to a wide variety of N-spiro C2-sym. chiral quaternary ammonium bromides of type I [Ar = 3,5-Me<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, 3,4,5-F<sub>3</sub>C<sub>6</sub>H<sub>2</sub>].

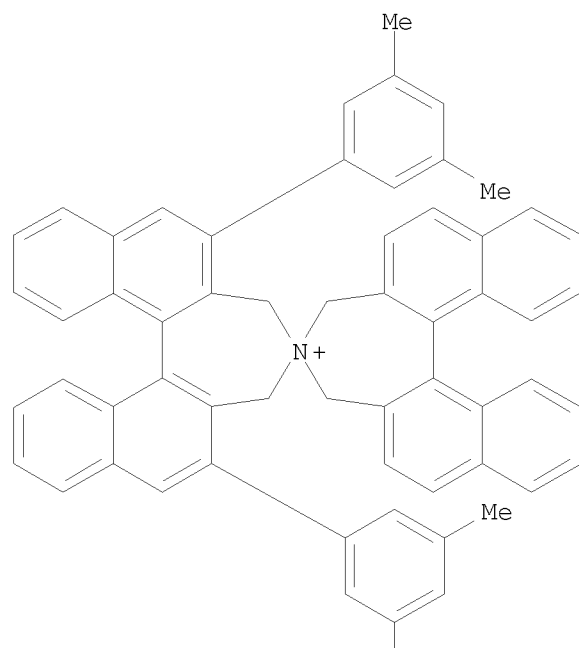
IT 561054-89-5P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of bis(binaphthalenedimethyl)ammonium bromides)

RN 561054-89-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,5-dimethylphenyl)-3,3',5,5'-tetrahydro-, bromide, (11bS,11'bS)-  
(9CI) (CA INDEX NAME)

PAGE 1-A



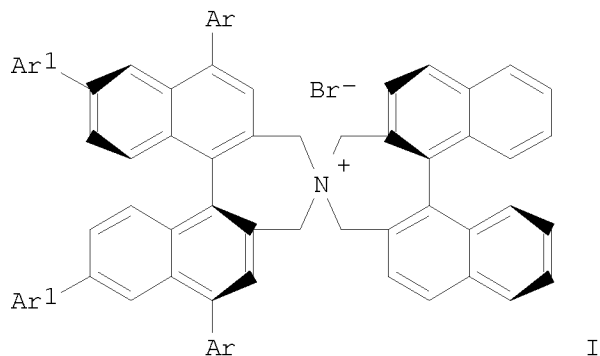
PAGE 2-A



OS.CITING REF COUNT:	38	THERE ARE 38 CAPLUS RECORDS THAT CITE THIS RECORD (40 CITINGS)
REFERENCE COUNT:	12	THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

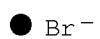
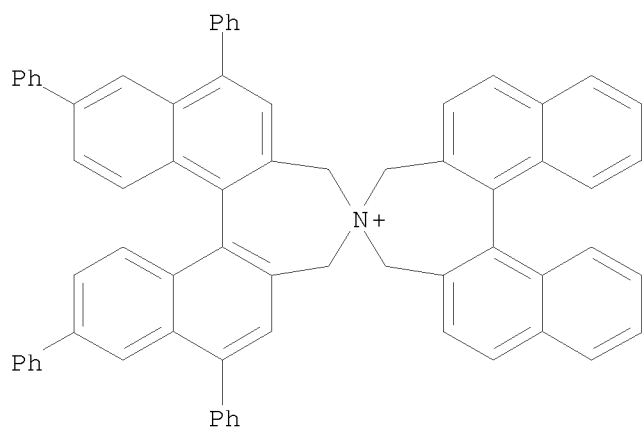


L29 ANSWER 43 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2003:262843 CAPLUS  
 DOCUMENT NUMBER: 139:197246  
 TITLE: Substituent effect of binaphthyl-modified spiro-type  
 chiral phase-transfer catalysts  
 AUTHOR(S): Hashimoto, Takuya; Maruoka, Keiji  
 CORPORATE SOURCE: Graduate School of Science, Department of Chemistry,  
 Kyoto University, Kyoto, 606-8502, Japan  
 SOURCE: Tetrahedron Letters (2003), 44(16), 3313-3316  
 CODEN: TELEAY; ISSN: 0040-4039  
 PUBLISHER: Elsevier Science Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 139:197246  
 GI

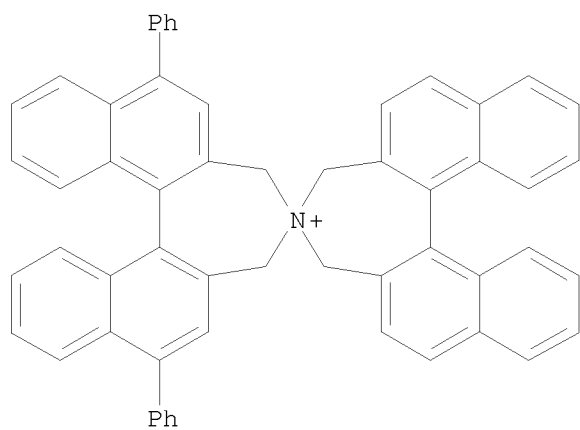


AB Binaphthyl-modified spiro-type phase-transfer catalysts possessing  
 4,4'-diaryl substituents are shown to exhibit high asym. induction in the  
 benzylation of  $\text{Ph}_2\text{C:NCH}_2\text{CO}_2\text{Bu-t}$  under phase-transfer conditions. For  
 example, spiro (diaryl)binaphthalene derivs. I-III ( $\text{Ar} = \text{Ar1} = \text{Ph}$ ;  $\text{Ar} =$   
 $\text{Ph}$ ,  $\text{Ar1} = \text{H}$ ;  $\text{Ar} = \text{Ar1} = 3,5\text{-diphenylphenyl}$ ) were prepared and used as chiral  
 catalysts for the asym. alkylation of  $\text{Ph}_2\text{C:NCH}_2\text{CO}_2\text{Bu-t}$  with  $\text{RBr}$  ( $\text{R} =$   
 benzyl, allyl, methallyl, propargyl, 4-fluorobenzyl, 1-naphthylmethyl).  
 IT 583050-09-3P 583050-10-6P 583050-11-7P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
 USES (Uses)  
 (preparation of spiro binaphthyl derivs. as chiral phase-transfer catalysts  
 for asym. alkylation of N-(diphenylmethylene)glycinate)  
 RN 583050-09-3 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-1,7,9,14-tetraphenyl-, bromide, (11bS,11'bS)- (9CI)  
 (CA INDEX NAME)

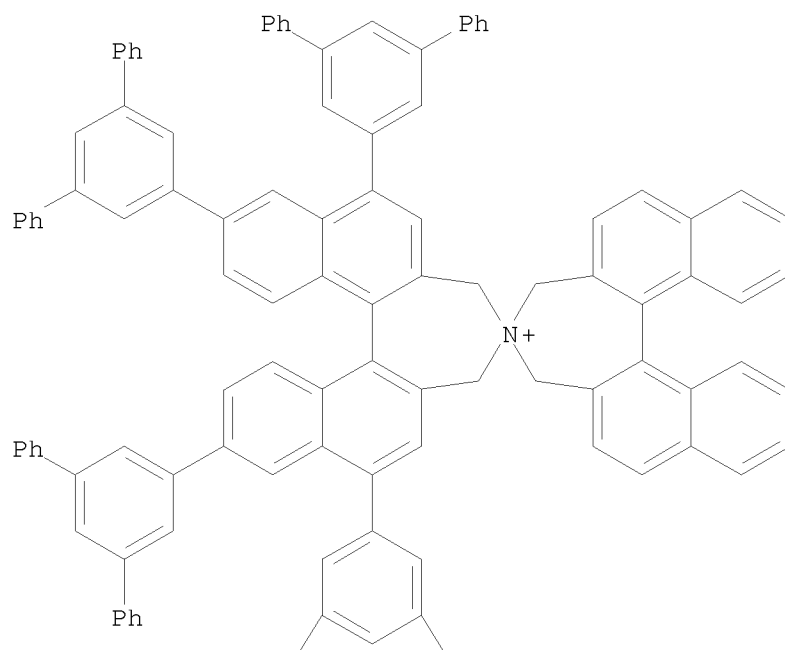
10/587,467



RN 583050-10-6 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,7-diphenyl-, bromide, (11bS,11'bs)- (9CI) (CA  
INDEX NAME)

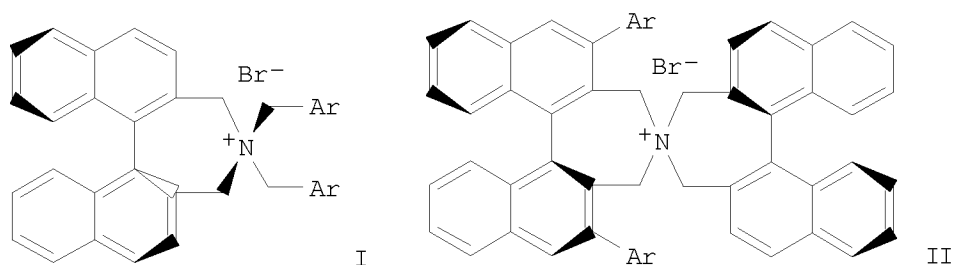


RN 583050-11-7 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,7,9,14-tetrakis([1,1':3',1''-terphenyl]-5'-yl)-,  
bromide, (11bS,11'bs)- (9CI) (CA INDEX NAME)



```
OS.CITING REF COUNT:      30      THERE ARE 30 CAPLUS RECORDS THAT CITE THIS
                                RECORD (30 CITINGS)
REFERENCE COUNT:          19      THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS
                                RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
```

L29 ANSWER 44 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2003:251281 CAPLUS  
 DOCUMENT NUMBER: 139:7140  
 TITLE: Design of N-Spiro C2-Symmetric Chiral Quaternary Ammonium Bromides as Novel Chiral Phase-Transfer Catalysts: Synthesis and Application to Practical Asymmetric Synthesis of  $\alpha$ -Amino Acids  
 AUTHOR(S): Ooi, Takashi; Kameda, Minoru; Maruoka, Keiji  
 CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan  
 SOURCE: Journal of the American Chemical Society (2003), 125(17), 5139-5151  
 CODEN: JACSAT; ISSN: 0002-7863  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 139:7140  
 GI



AB Chiral phase-transfer catalysts, C2-sym. chiral quaternary ammonium bromides I (Ar = Ph,  $\alpha$ -naphthyl) and II [Ar = H, Ph,  $\beta$ -naphthyl, 3,5-(diphenyl)phenyl, 4-fluorophenyl, 3,4,5-trifluorophenyl], were readily prepared from com. available optically pure 1,1'-bi-2-naphthol. Detailed procedures for the synthesis of I and II were given, and the structures of II (Ar = H, 3,4,5-trifluorophenyl) were unequivocally determined by single-crystal x-ray diffraction anal. The reactivity and selectivity of these chiral ammonium bromides as chiral phase-transfer catalysts were evaluated in the asym. alkylation of Ph<sub>2</sub>C:NCH<sub>2</sub>CO<sub>2</sub>R (R = Bu-t, Me, CH<sub>2</sub>Ph, CHPh<sub>2</sub>) by PhCH<sub>2</sub>Br under mild liquid-liquid phase-transfer conditions, and the optimization of the reaction variables (solvent, base, and temperature) was conducted. In addition, the scope and limitations of this asym. alkylation were thoroughly investigated with a variety of alkyl halides, in which the advantage of the unique N-spiro structure of II and dramatic effect of the steric as well as the electronic properties of the aromatic substituents on the 3,3'-position of the binaphthyl moiety were emphasized. Finally, the asym. synthesis of Me and tert-Bu (S)-N-acetylmethionine-2-carboxylates, and L-Dopa (L-3,4-dihydroxyphenylalanine) tert-Bu ester was successfully accomplished using the above methodol.

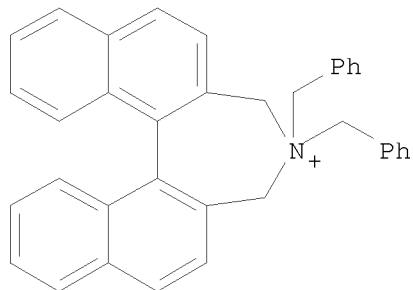
IT 237762-38-8P 237762-39-9P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
 USES (Uses)

(preparation of binaphthyl quaternary ammonium bromides as chiral phase-transfer catalysts for asym. alkylation of glycine Schiff base)

10/587,467

RN 237762-38-8 CAPLUS

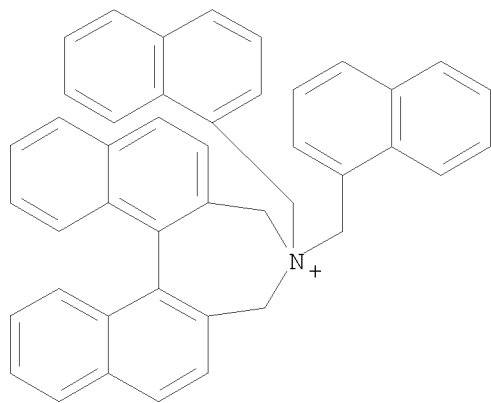
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-bis(phenylmethyl)-,  
bromide (1:1), (11bS)- (CA INDEX NAME)



● Br<sup>-</sup>

RN 237762-39-9 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-bis(1-naphthalenylmethyl)-, bromide, (11bS)- (9CI) (CA  
INDEX NAME)



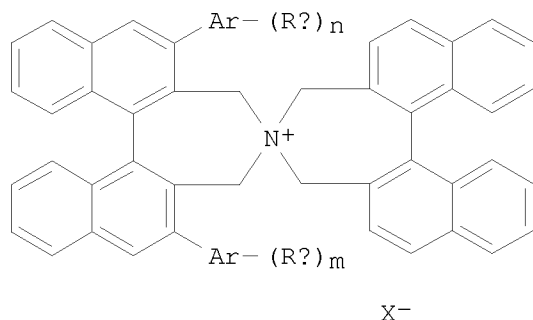
● Br<sup>-</sup>

OS.CITING REF COUNT:	142	THERE ARE 142 CAPLUS RECORDS THAT CITE THIS RECORD (145 CITINGS)
REFERENCE COUNT:	10	THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 45 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2003:216947 CAPLUS  
 DOCUMENT NUMBER: 138:238030  
 TITLE: Preparation of chiral phase-transfer catalysts and  
 their use in diastereoselective preparation of  
 peptides substituted at C $\alpha$  position of  
 N-terminal amino acid residue  
 INVENTOR(S): Maruoka, Keiji  
 PATENT ASSIGNEE(S): Nagase and Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003081976	A	20030319	JP 2001-301866	20010928
PRIORITY APPLN. INFO.:			JP 2001-201206	A 20010702
OTHER SOURCE(S):	MARPAT 138:238030			

GI



AB N-spiroquaternary ammonium salts I [ $m, n \geq 1$ ; when  $m$  or  $n \geq 2$ , then  $R_a, R_b$  = C1-8 linear or branched alkyl(oxy), C2-8 linear or branched alkenyl, C2-8 alkynyl, halo, (un)substituted aryl; when  $m = n = 1$ , then  $R_a, R_b$  = (un)substituted aryl;  $Ar$  = aryl;  $X$  = halo] are prepared R1R2C:NCR3R4COZ [ $R_1, R_2$  = H, (un)substituted aryl;  $R_1 = R_2 \neq H$ ;  $R_3$  = H, C1-6 (branched or cyclic) alkyl(oxy), C2-6 (branched or cyclic) alkenyl, C2-6 (branched or cyclic) alkynyl, (un)substituted (hetero)aryl;  $Z$  =  $\alpha$ -amino acid or di- or tripeptide (branched or cyclic) C1-6 alkyl ester residue;  $R_4$  = C1-10 (branched or cyclic) alkyl, C3-10 (branched or cyclic) (un)substituted aryl, (un)substituted (hetero)aralkyl, etc.], useful as intermediates for antihypertensives, artificial sweeteners, etc., are stereoselectively prepared by treatment of R1R2C:NCHR3COZ ( $R_1-R_3, Z$  = same as above) with R4W ( $R_4$  = same as above) in organic solvent-water mixed solvent system in the presence of bases and the chiral N-spiroquaternary ammonium salts as phase-transfer catalysts. Thus, (S)-Ph2C:NCH2CONHCH(CH2Ph)CO2CMe3 was alkylated with EtI in the presence of CsOH and (S,S)-I [ $Ar$  = benzene residue,  $(R_a)_n = Ar(R_b)_m =$

3,5-di(3,5-di-tert-phenyl)] at 0° for 6 h in MePh to give 86% diastereomeric mixture of Ph<sub>2</sub>C:NCH<sub>2</sub>CONHCH(CH<sub>2</sub>Ph)CO<sub>2</sub>CMe<sub>3</sub> with 98% de.

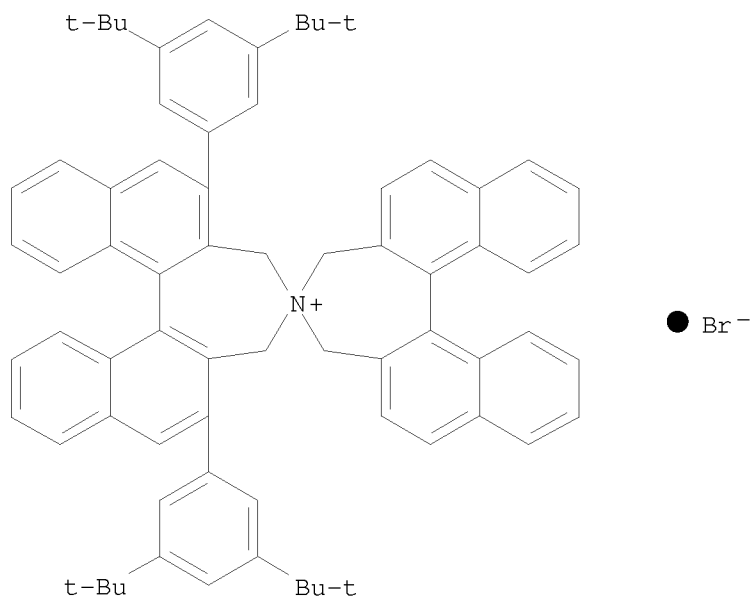
IT 501934-20-9P 501934-21-0P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of N-spiroquaternary ammonium salts as chiral phase-transfer catalysts for diastereoselective preparation of modified peptides)

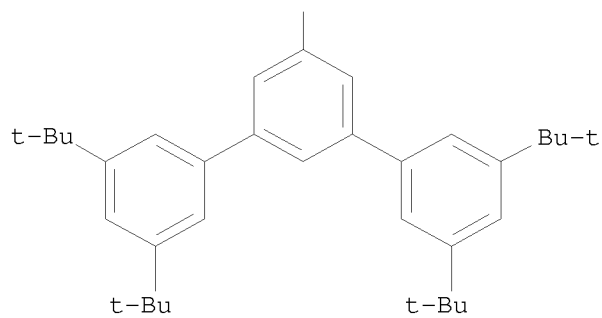
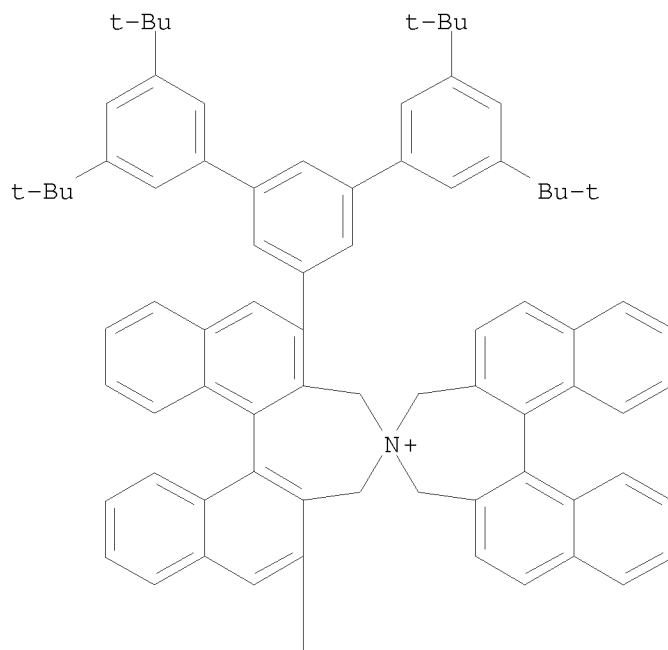
RN 501934-20-9 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide  
(1:1), (11bS,11'bS)- (CA INDEX NAME)



RN 501934-21-0 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-  
dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide (1:1),  
(11bS,11'bS)- (CA INDEX NAME)



OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD  
(1 CITINGS)



L29 ANSWER 46 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:168090 CAPLUS

DOCUMENT NUMBER: 139:16664

TITLE: Electrochemical recognition of analytes using quaternary ammonium binaphthyl salts

AUTHOR(S): Abbott, Andrew P.; Barker, George W.; Walter, Andrew J.; Kocovsky, Pavel

CORPORATE SOURCE: Department of Chemistry, University of Leicester, Leicester, LE1 7RH, UK

SOURCE: Analyst (Cambridge, United Kingdom) (2003), 128(3), 245-248

CODEN: ANALAO; ISSN: 0003-2654

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

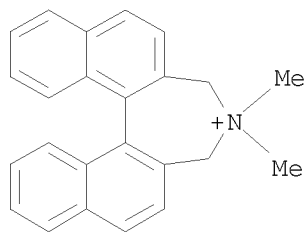
AB The electrooxidn. of quaternary ammonium binaphthyl salts proceeds by a quasi-reversible 1-electron process. The oxidation of an aza-crown ether substituted binaphthyl salt is affected by the presence of lithium and sodium ions in solution and there is a linear relation between the limiting current for the process and the concentration of Li<sup>+</sup> and Na<sup>+</sup>. The electrochem. of the binaphthyl salt also is affected by the addition of organic cations to the solution, showing that these receptors could form the basis of anal. devices which could be made specific to a range of analytes.

IT 97781-19-6, 4,5-Dihydro-4,4-dimethyl-3H-dinaphth[2,1-c:1',2'-e]azepinium bromide 222613-29-8 535975-21-4

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (lithium and sodium ions and p-toluene sulfonic acid electrochem. recognition using quaternary ammonium binaphthyl salts)

RN 97781-19-6 CAPLUS

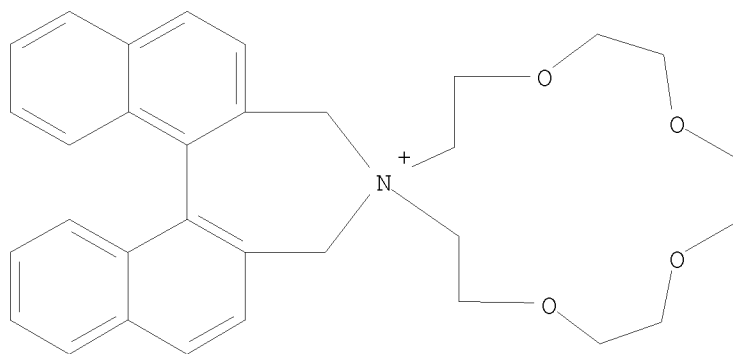
CN 7H-Dinaphth[2,1-c:1',2'-e]azepinium, 8,9-dihydro-8,8-dimethyl-, bromide (1:1) (CA INDEX NAME)



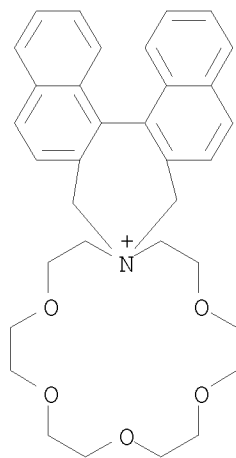
RN 222613-29-8 CAPLUS

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,13'-[1,4,7,10]tetraoxa[13]azacyclopentadecanium], 7,9-dihydro-, bromide (1:1) (CA INDEX NAME)

10/587,467



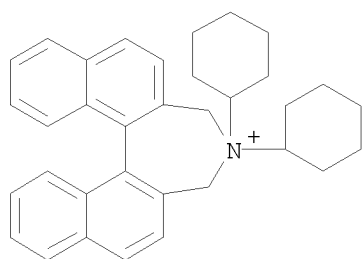
RN 535975-21-4 CAPLUS  
CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,16'-  
[1,4,7,10,13]pentaoxa[16]azacyclooctadecanium], 7,9-dihydro-, bromide  
(1:1) (CA INDEX NAME)



IT 535975-22-5P, N,N-Dicyclohexyl-4,5-dihydro-3H,4-azonia-  
cyclohepta(2,1-a;3,4-a')dinaphthalene bromide  
RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic  
preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)  
(lithium and sodium ions and p-toluene sulfonic acid electrochem.  
recognition using quaternary ammonium binaphthyl salts)  
RN 535975-22-5 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,4-dicyclohexyl-4,5-dihydro-,

10/587,467

```
bromide (1:1) (CA INDEX NAME)
```



REFERENCE COUNT:

27

THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 47 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:137339 CAPLUS

DOCUMENT NUMBER: 139:7158

TITLE: Highly stereoselective N-terminal functionalization of small peptides by chiral phase-transfer catalysis

AUTHOR(S): Ooi, Takashi; Tayama, Eiji; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan

SOURCE: Angewandte Chemie, International Edition (2003), 42(5), 579-582

CODEN: ACIEF5; ISSN: 1433-7851

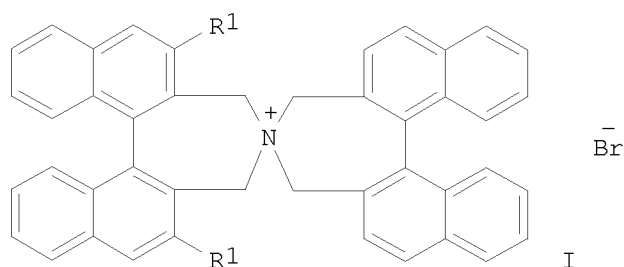
PUBLISHER: Wiley-VCH Verlag GmbH &amp; Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:7158

GI



AB The optically pure, C2-sym. quaternary ammonium salts I [R1 = 2-naphthalene, 2,3,4-trifluorophenyl, 3,5-di-tert-butylphenyl, 3,5-bis(3,5-di-tert-butylphenyl)phenyl] were prepared and used as the catalysts for asym. phase-transfer catalytic alkylation of peptides. The stereoselective alkylation of dipeptide derivs. Ph<sub>2</sub>C:NCH<sub>2</sub>CO-L-AA-Ot-Bu (AA = amino acid), Ph<sub>2</sub>C:NCH<sub>2</sub>CO-L(D)-Ala-Ot-Bu and p-ClPhCH:NCH(Me)CO-L-Phe-Ot-Bu was examined and the critical importance of the chiral phase-transfer catalysis in obtaining high stereoselectivity was evaluated.

IT 466679-91-4 501934-20-9 501934-21-0  
534576-68-6

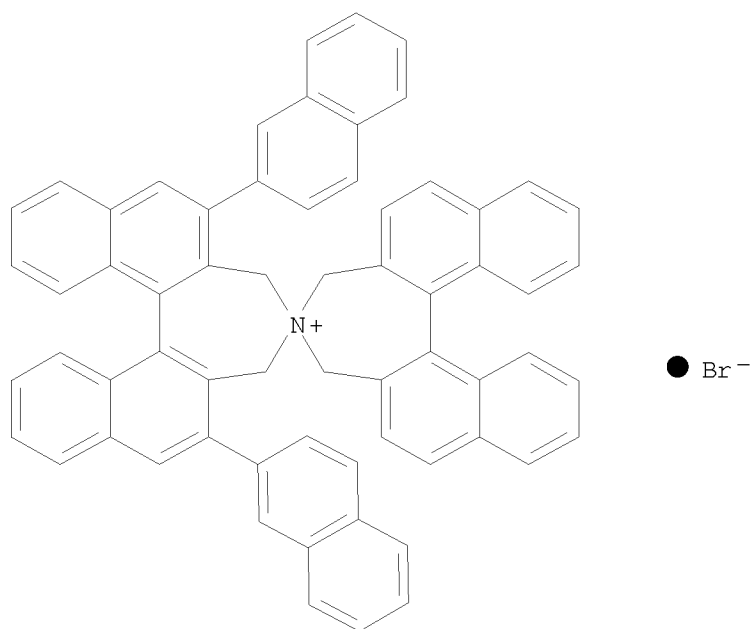
RL: CAT (Catalyst use); USES (Uses)

(stereoselective alkylation of dipeptide derivs. using chiral quaternary ammonium salts as phase-transfer catalysts)

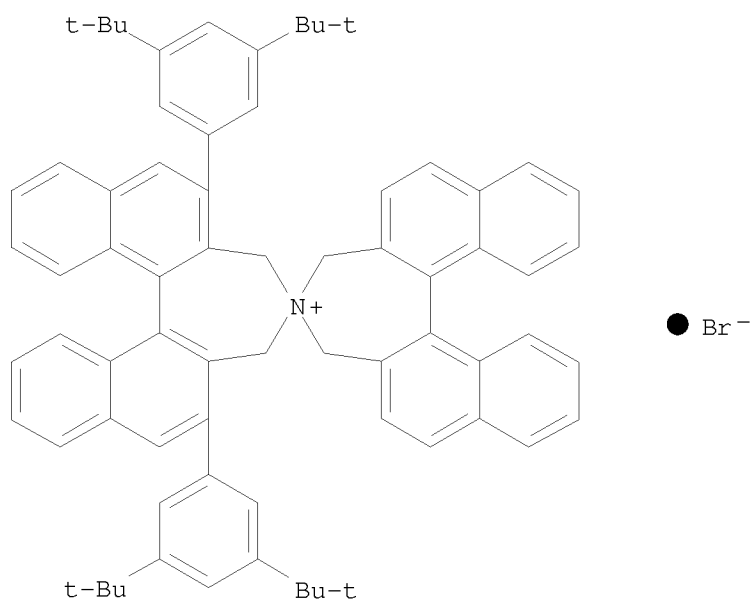
RN 466679-91-4 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, bromide, (11bR,11'bR)- (9CI)  
(CA INDEX NAME)

10/587,467



RN 501934-20-9 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide  
(1:1), (11bS,11'bS)- (CA INDEX NAME)

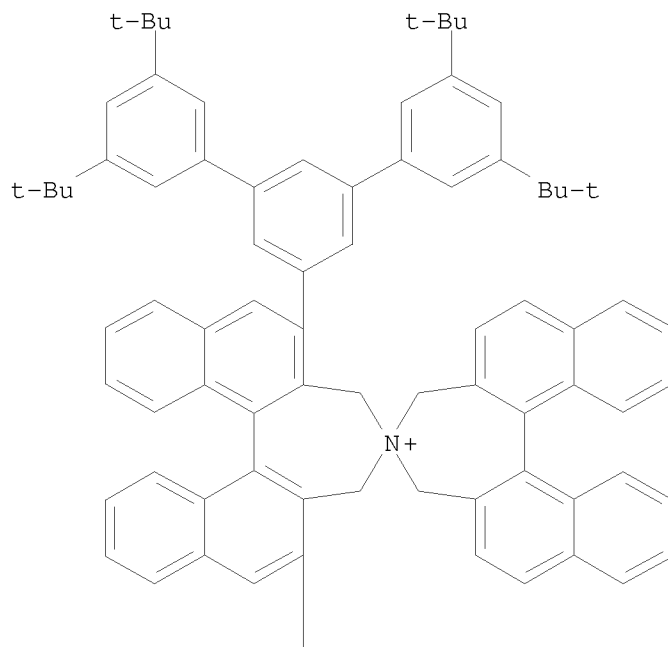


RN 501934-21-0 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-

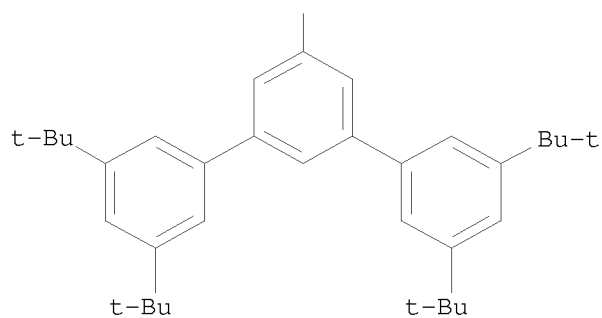
10/587,467

dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide (1:1),  
(11bS,11'bS)- (CA INDEX NAME)

PAGE 1-A

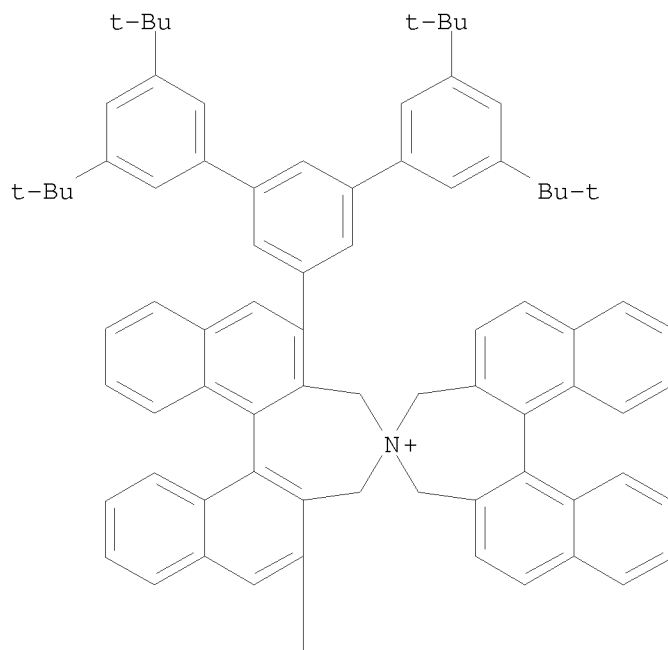


PAGE 2-A

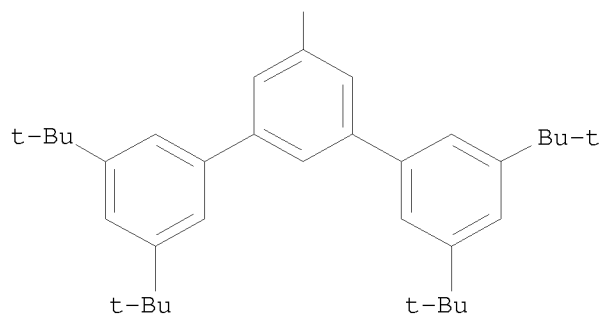


RN 534576-68-6 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-  
dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide, (11bR,11'bR)-  
(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



OS.CITING REF COUNT: 57 THERE ARE 57 CAPLUS RECORDS THAT CITE THIS  
RECORD (57 CITINGS)  
REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 48 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:973631 CAPLUS  
 DOCUMENT NUMBER: 138:338430  
 TITLE: Direct asymmetric aldol reactions of glycine schiff base with aldehydes catalyzed by chiral quaternary ammonium salts  
 AUTHOR(S): Ooi, Takashi; Taniguchi, Mika; Kameda, Minoru; Maruoka, Keiji  
 CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Sakyo, Kyoto, 606-8502, Japan  
 SOURCE: Angewandte Chemie, International Edition (2002), 41(23), 4542-4544  
 CODEN: ACIEF5; ISSN: 1433-7851  
 PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 138:338430  
 GI



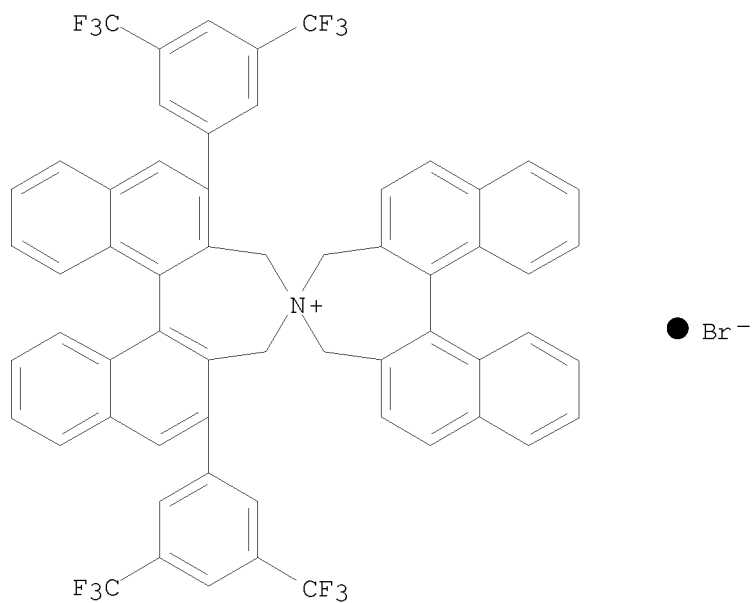
AB A practical and environmentally friendly chemical process for the synthesis of optically active  $\beta$ -hydroxy- $\alpha$ -amino acids, which involves the reaction of glycine Schiff base I with aldehyde acceptors in the presence of catalytic N-spiro chiral quaternary ammonium bromide under mild organic/aqueous biphasic conditions is developed. The cross-aldol products II [R1 = (CH<sub>2</sub>)<sub>2</sub>Ph, (CH<sub>2</sub>)<sub>5</sub>Me, CH<sub>2</sub>Si(i-Pr)<sub>3</sub>, Me, etc] are obtained with excellent stereochem. control.

IT 515137-97-0 515137-98-1  
 RL: CAT (Catalyst use); USES (Uses)  
 (asym. synthesis of  $\beta$ -hydroxy amino acids by aldol condensation of glycine schiff base with aldehydes catalyzed by chiral quaternary ammonium salts under phase transfer conditions)

RN 515137-97-0 CAPLUS

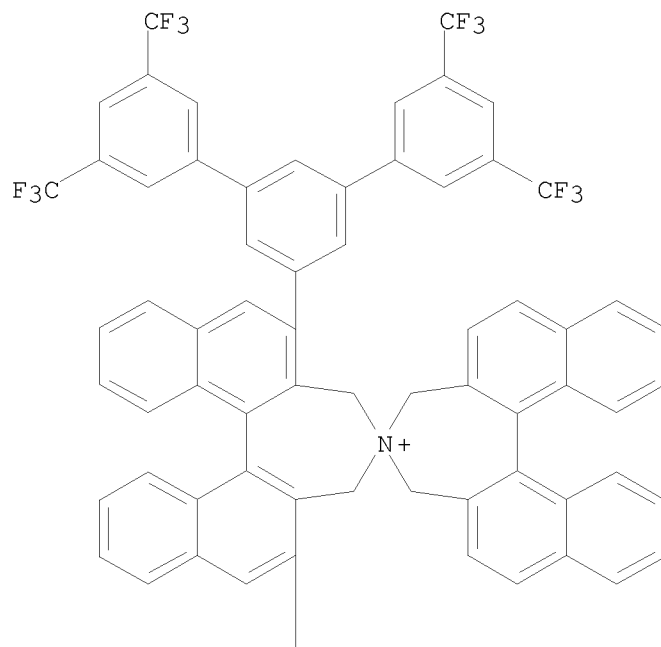
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-, bromide (1:1), (11bR,11'bR)- (CA INDEX NAME)

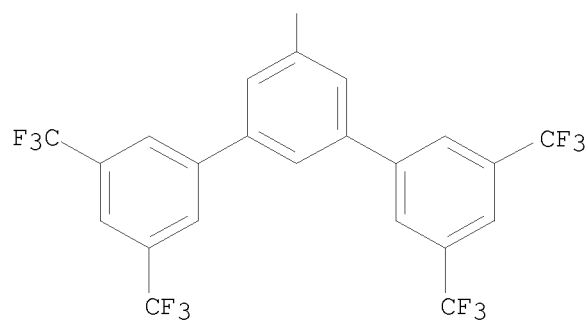




RN 515137-98-1 CAPLUS  
 CN 4,4'-Spiro[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
 tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, bromide,  
 (11bR,11'bR)- (9CI) (CA INDEX NAME)

PAGE 1-A





```
OS.CITING REF COUNT:      87   THERE ARE 87 CAPLUS RECORDS THAT CITE THIS
                             RECORD (87 CITINGS)
REFERENCE COUNT:          45   THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS
                             RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
```

L29 ANSWER 49 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2002:866819 CAPLUS

DOCUMENT NUMBER: 137:370354

TITLE: Preparation of N-spiro quaternary ammonium salts and their use for stereoselective preparation of glycine derivatives

INVENTOR(S): Maruoka, Keiji

PATENT ASSIGNEE(S): Nagase and Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

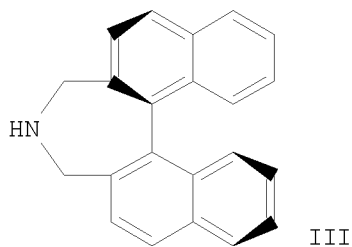
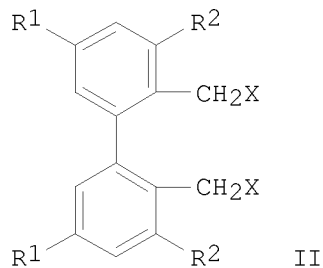
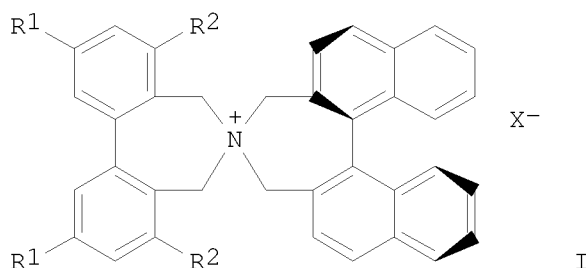
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002326992	A	20021115	JP 2001-135526	20010502
PRIORITY APPLN. INFO.:			JP 2001-135526	20010502
OTHER SOURCE(S):	MARPAT	137:370354		

GI



AB The spiro compds. I [R1 = H, lower alkyl, lower alkoxy, lower alkenyl, lower alkynyl, halo, (un)substituted (hetero)aryl; R2 = any group given for R1, (hetero)aryl substituted with (un)substituted (hetero)aryl; X = halo] are prepared by treatment of bis(halomethyl)biphenyls II (R1, R2, X = same as in I; R1 and/or R2 = group other than H) with dinaphthazepines III in organic solvents in the presence of acid scavengers. Optically-active R3R4C:NCR5R7CO2R6 [R3, R4 = H, aryl which may be substituted with C1-3

alkyl, C1-3 alkoxy, halo; R3 and/or R4 = group other than H; R5 = any group given for R3, C1-6 cycloalkyl, aralkyl which may be substituted with C1-3 alkyl, C1-3 alkoxy, halo; R6 = C1-4 alkyl; R7 = C1-6 (cyclo)alkyl, C3-9 (un)substituted aryl, (un)substituted (hetero)aralkyl, (un)substituted propargyl] are stereoselectively prepared by alkylating R3R4C:NCHR5CO2R6 (R3-R6 = same as above) with R7W [R7 = same as above; W = leaving group]. An MeCN solution of III was treated with K2CO3 at room

temperature

for 30 min and further treated with II (R1 = Ph, R2 = 3,5-Ph2C6H3, X = Br) (preparation given) under reflux for 9 h to give 84% I (R1 = Ph, R2 = 3,5-Ph2C6H3, X = Br) (IV). PhCH2Br was added dropwise to a mixture of glycine tert-Bu ester benzophenone Schiff base, IV, toluene, and aqueous KOH solution at 0° and the reaction mixture was stirred at 0° for 48 h to give 81% (R)-phenylalanine tert-Bu ester benzophenone Schiff base with 95% e.e.

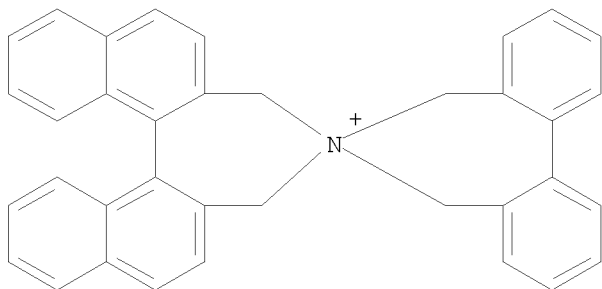
IT 452067-23-1P 452067-24-2P 452067-25-3P  
452067-29-7P

RL: CAT (Catalyst use); IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of N-spiro quaternary ammonium salts and their use for stereoselective preparation of glycine derivs.)

RN 452067-23-1 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium], 3',5,5',7-tetrahydro-, bromide, (11'bS)- (CA INDEX NAME)

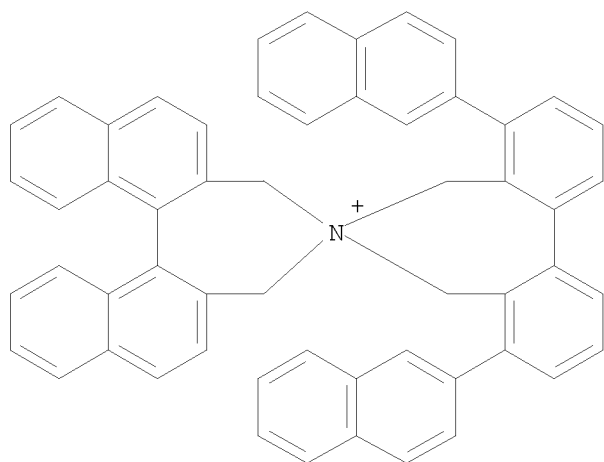


● Br<sup>-</sup>

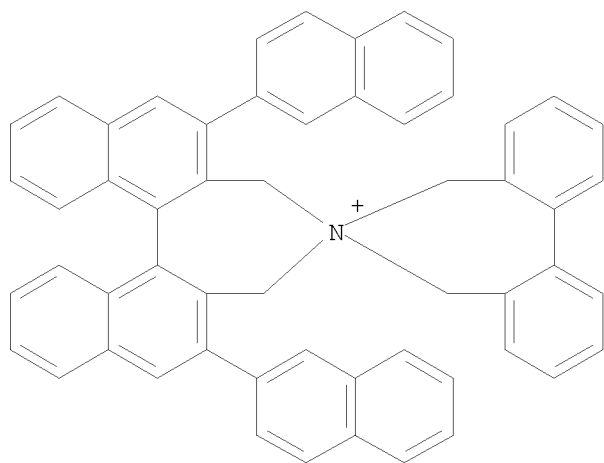
RN 452067-24-2 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium], 3',5,5',7-tetrahydro-4,8-di-2-naphthalenyl-, bromide, (11'bS)- (CA INDEX NAME)

10/587,467

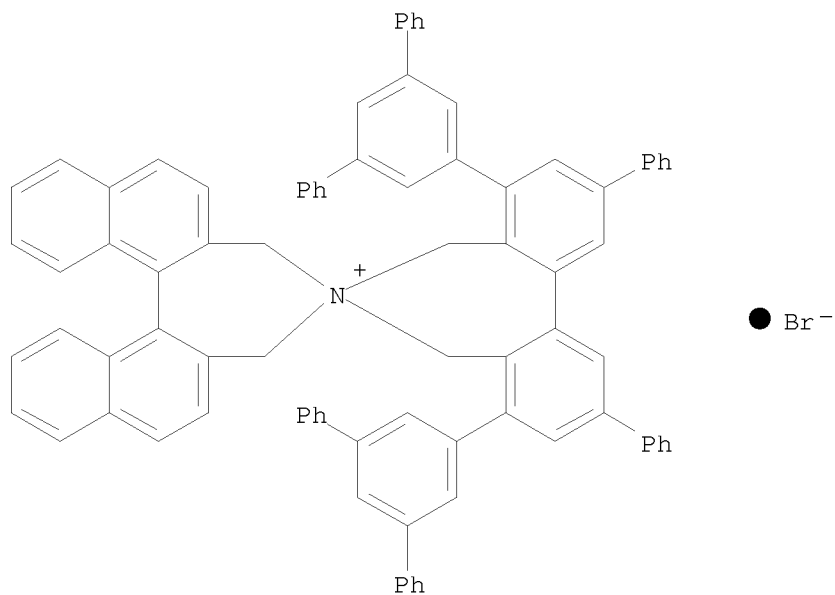


RN 452067-25-3 CAPLUS  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-2',6'-di-2-naphthalenyl-, bromide, (11'bS)-(9CI)  
(CA INDEX NAME)



RN 452067-29-7 CAPLUS  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-2,10-diphenyl-4,8-bis([1,1':3',1''-terphenyl]-5'-yl)-  
, bromide, (11'bS)-(CA INDEX NAME)

10/587,467



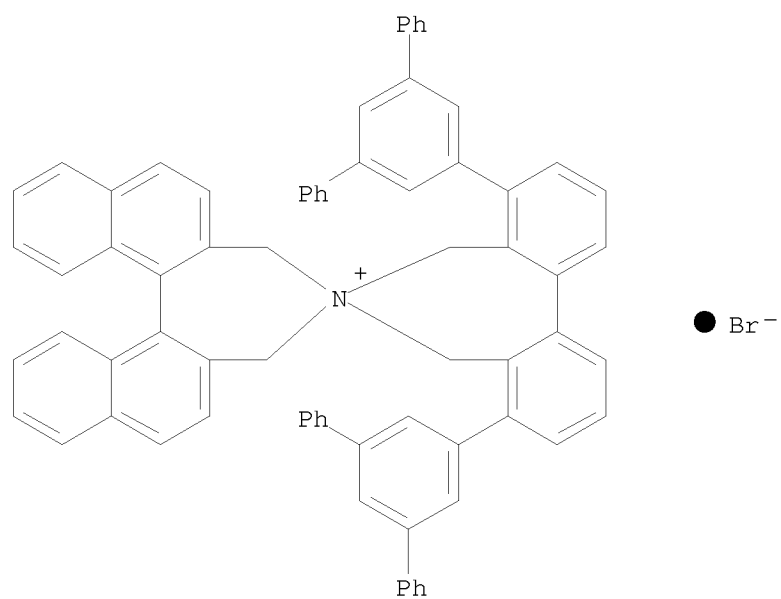
IT 452067-28-6P

RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation of N-spiro quaternary ammonium salts and their use for stereoselective preparation of glycine derivs.)

RN 452067-28-6 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium], 3',5,5',7-tetrahydro-4,8-bis([1,1':3',1''-terphenyl]-5'-yl)-, bromide, (11'bs)- (CA INDEX NAME)

10/587,467

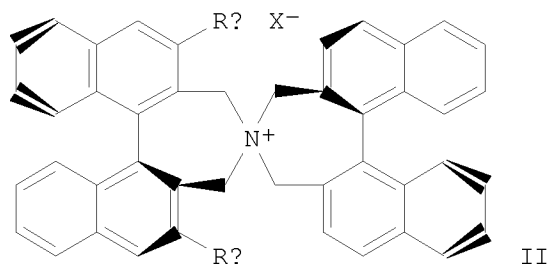


OS.CITING REF COUNT: 7

THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD  
(7 CITINGS)

L29 ANSWER 50 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:686487 CAPLUS  
 DOCUMENT NUMBER: 137:216763  
 TITLE: Preparation of optically active  $\alpha$ -amino ketones  
 INVENTOR(S): Maruoka, Keiji  
 PATENT ASSIGNEE(S): Nippon Soda Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002255912	A	20020911	JP 2001-50952	20010226
PRIORITY APPLN. INFO.:			JP 2001-50952	20010226
OTHER SOURCE(S):	MARPAT	137:216763		
GI				



AB Optically active  $R_1COCHR_2NH_2$  [I;  $R_1, R_2 = H, \text{ alkyl, (un)substituted aryl, (un)substituted heteroaryl, (un)substituted aralkyl}$ ] are prepared by treatment of  $R_1C(:NOR_3)CH_2R_2$  ( $R_1, R_2 = \text{same as I; } R_3 = \text{leaving group}$ ) with bases in the presence of optically active phase-transfer catalysts and lower alcs. and treatment with acids. Anti-deoxybenzoin oxime was treated with KOH in MeOH-PhMe in the presence of p-MeC<sub>6</sub>H<sub>4</sub>SO<sub>2</sub>Cl and phase-transfer catalyst II ( $R_a = \beta\text{-naphthyl}$ ) at 0° for 4 h and treated with HCl at 0° for 2 h to give 53% optically active I ( $R_1 = R_2 = Ph$ ) with 30% ee.

IT 344550-37-4

RL: CAT (Catalyst use); USES (Uses)

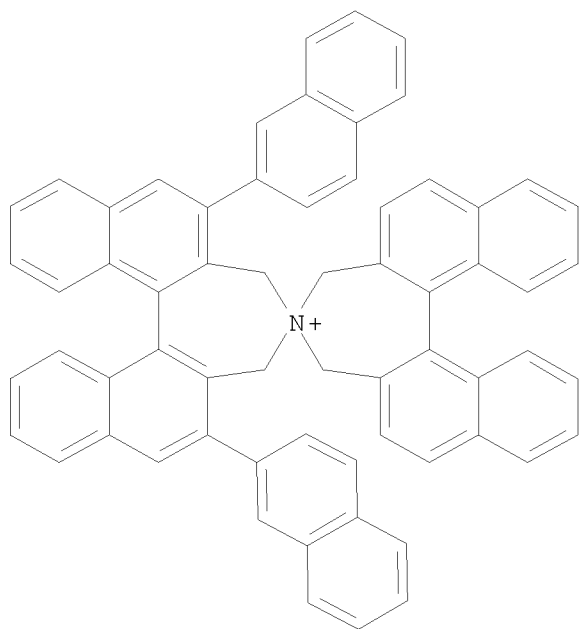
(catalyst; preparation of optically active  $\alpha$ -amino ketones from oximes)

RN 344550-37-4 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, (11bS,11'bS)- (9CI) (CA  
 INDEX NAME)



10/587,467



OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD  
(2 CITINGS)

L29 ANSWER 51 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2002:534319 CAPLUS

DOCUMENT NUMBER: 137:225962

TITLE: Electrochemical Recognition of Chiral Species Using Quaternary Ammonium Binaphthyl Salts

AUTHOR(S): Abbott, Andrew P.; Barker, George W.; Davies, David L.; Griffiths, Gerald A.; Walter, Andrew J.; Kocovsky, Pavel

CORPORATE SOURCE: Department of Chemistry, University of Leicester, Leicester, LE1 7RH, UK

SOURCE: Analytical Chemistry (2002), 74(16), 4002-4006

CODEN: ANCHAM; ISSN: 0003-2700

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The use of ephedrine-substituted quaternary ammonium binaphthyl salts as mol. receptors is demonstrated. The electrochem. oxidation of the receptor is affected by the binding of an analyte in solution. The binding site on the binaphthyl salt was determined using computer modeling and confirmed using 1-dimensional and 2-dimensional NMR studies. The sensitivity of the receptor is related to the size of the analyte. Axially chiral binaphthyl salts bind chiral analytes in a different manner and this is demonstrated using lactic and mandelic acid. The presence of a polar functional group on the analyte also has an effect on the guest-host interaction.

IT 86593-80-8 86631-57-4

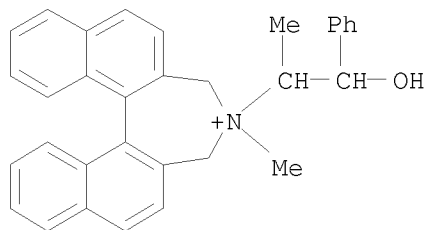
RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified);

PRP (Properties); ANST (Analytical study); USES (Uses)

(electrochem. recognition of chiral species using quaternary ammonium binaphthyl salts)

RN 86593-80-8 CAPLUS

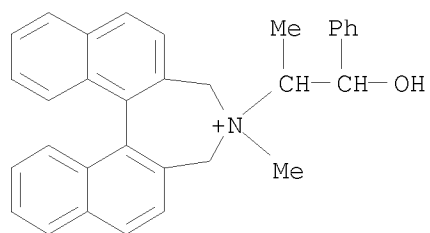
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)



RN 86631-57-4 CAPLUS

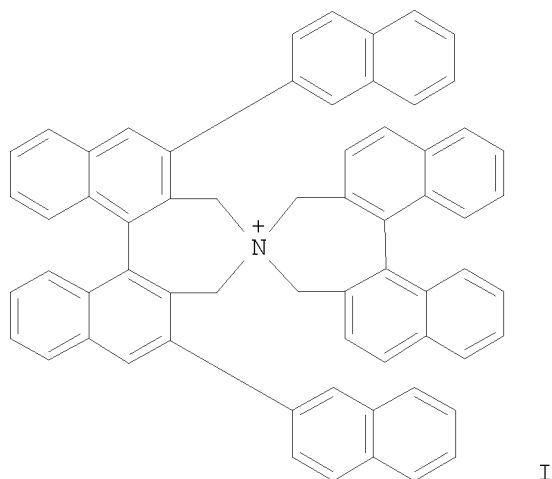
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bR)- (9CI) (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT:	6	THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)
REFERENCE COUNT:	33	THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

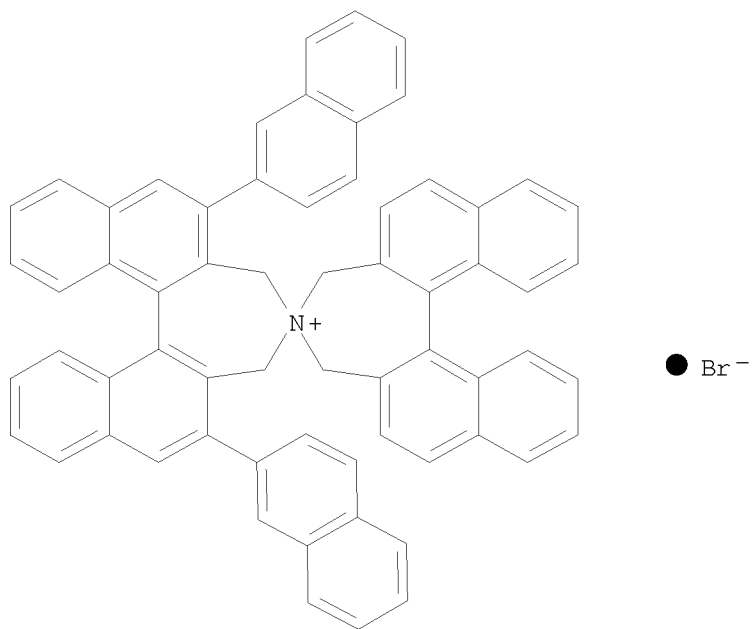
L29 ANSWER 52 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:519351 CAPLUS  
 DOCUMENT NUMBER: 137:279434  
 TITLE: Evaluation of the efficiency of the chiral quaternary ammonium salt  $\beta$ -Np-NAS-Br in the organic-aqueous phase-transfer alkylation of a protected glycine derivative  
 AUTHOR(S): Ooi, Takashi; Uematsu, Yukitaka; Maruoka, Keiji  
 CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan  
 SOURCE: Advanced Synthesis & Catalysis (2002), 344(3+4), 288-291  
 CODEN: ASCAF7; ISSN: 1615-4150  
 PUBLISHER: Wiley-VCH Verlag GmbH  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 137:279434  
 GI



AB The inherent efficiency of the N-spiro C2-sym. chiral quaternary ammonium salt (S,S)-I-Br [(S,S)- $\beta$ -Np-NAS-Br] has been evaluated in the representative organic-aqueous liquid-liquid phase-transfer benzylation and allylation of glycine tert-Bu ester benzophenone Schiff base Ph<sub>2</sub>C:NCH<sub>2</sub>COOCHMe<sub>3</sub>. This revealed the practical conditions for the asym. synthesis of both natural and unnatural  $\alpha$ -amino acids, whose usefulness was demonstrated by the formal enantioselective synthesis of antibiotic L-azatyrosine.

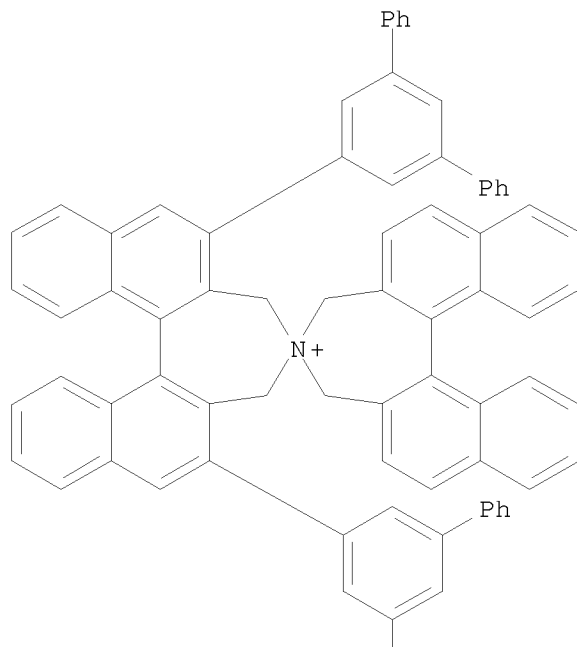
IT 466679-91-4 466679-93-6  
 RL: CAT (Catalyst use); USES (Uses)  
 (phase-transfer alkylation of protected glycine derivative using chiral quaternary ammonium salt as catalyst in organic-aqueous)

RN 466679-91-4 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, bromide, (11bR,11'bR)- (9CI)  
 (CA INDEX NAME)



RN 466679-93-6 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 2,6-bis([1,1':3',1''-terphenyl]-5'-yl)-3,3',5,5'-tetrahydro-, bromide  
 (1:1), (11bR,11'bR)- (CA INDEX NAME)

PAGE 1-A



|  
Ph

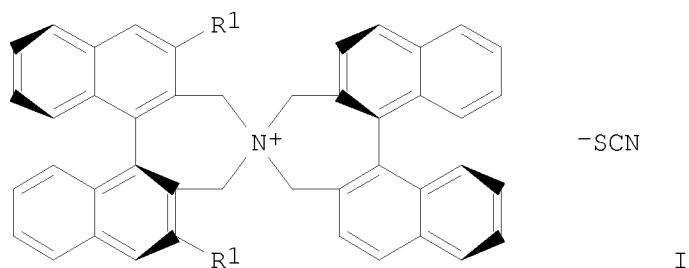
● Br<sup>-</sup>

OS.CITING REF COUNT:	37	THERE ARE 37 CAPLUS RECORDS THAT CITE THIS RECORD (40 CITINGS)
REFERENCE COUNT:	27	THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 53 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:464180 CAPLUS  
 DOCUMENT NUMBER: 137:47130  
 TITLE: Preparation of optically active azoniaspirotridecane salts and preparation of  $\beta$ -hydroxyketones by using them  
 INVENTOR(S): Maruoka, Keiji  
 PATENT ASSIGNEE(S): Nagase and Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002173492	A	20020621	JP 2000-372291	20001207
PRIORITY APPLN. INFO.:			JP 2000-372291	20001207
OTHER SOURCE(S):	CASREACT 137:47130; MARPAT 137:47130			

GI



AB The compds. I (R1, R2 = H, C1-6 alkyl, C2-6 alkenyl, C2-6 alkynyl, aralkyl, etc.) are prepared  $\beta$ -Hydroxyketones are prepared by stereoselective reaction of silyl enol ethers with carbonyl compds. in the presence of reaction products prepared by ion-exchanging I (R1, R2 = same as above) with H2SO4 and treated with alkali metal fluorides. I [R1 = R2 = 3,5-bis(trifluoromethyl)phenyl] was treated with H2SO4 in H2O at 75° for 1 h to give [(S)-3,3'-bis[di(3,5-trifluoromethyl)phenyl]-1,1'-binaphthyl-2,2'-dimethylammonium]spiro[(S)-1,1'-binaphthyl-2,2'-dimethylamine] bisulfate, which was treated with KF in THF at room temperature for 1 h and mixed with benzaldehyde, 4-trimethylsilyloxy-1,2-dihydronaphthalene, and PhMe -78° to -40° for 1 h to give 90% (2R,1'R)-2-(1'-hydroxy-1'-phenylmethyl)-1-tetralone.

IT 344550-36-3P 344550-38-5P 438001-94-6P  
 438001-95-7P 438001-96-8P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation of catalyst; preparation of optically active azoniaspirotridecane salts and preparation of  $\beta$ -hydroxyketones by using them)

RN 344550-36-3 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],

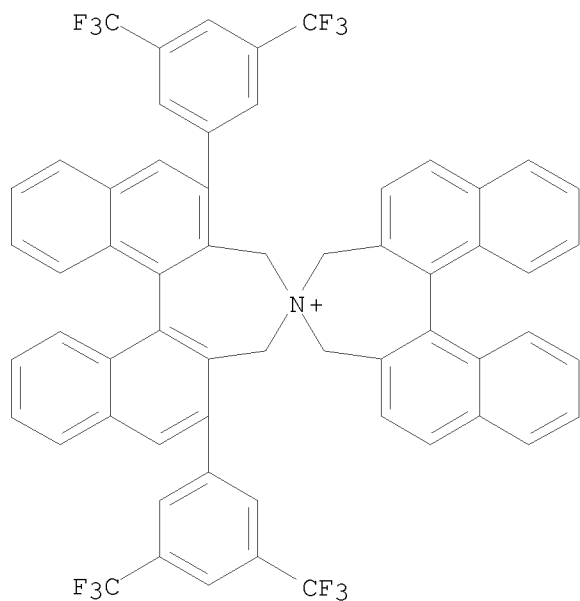
10/587,467

2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bS,11'bS)-, sulfate (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 344550-35-2

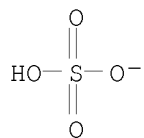
CMF C60 H36 F12 N



CM 2

CRN 14996-02-2

CMF H O4 S



RN 344550-38-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, (11bS,11'bS)-, sulfate (1:1)  
(9CI) (CA INDEX NAME)

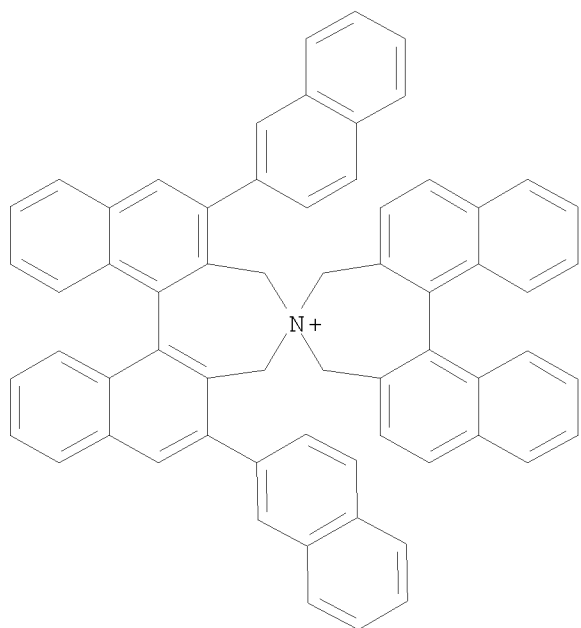
CM 1

CRN 344550-37-4

CMF C64 H44 N



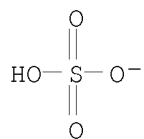
10/587,467



CM 2

CRN 14996-02-2

CMF H O4 S



RN 438001-94-6 CAPLUS

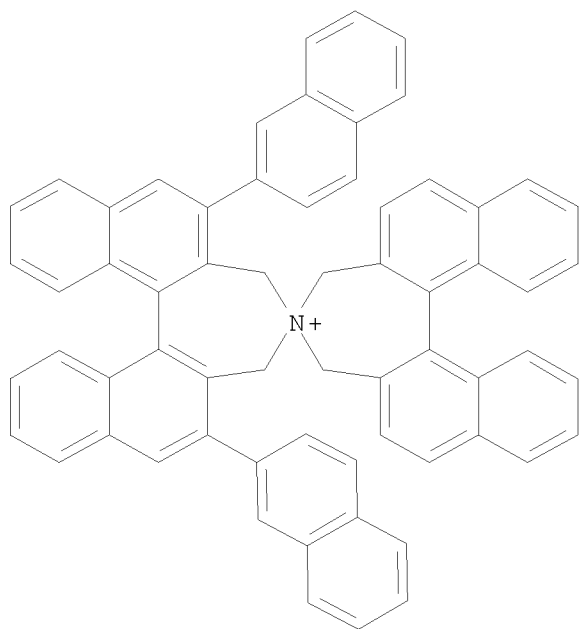
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, (11bS,11'bS)-, thiocyanate  
(9CI) (CA INDEX NAME)

CM 1

CRN 344550-37-4

CMF C64 H44 N

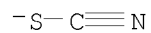
10/587,467



CM 2

CRN 302-04-5

CMF C N S



RN 438001-95-7 CAPLUS

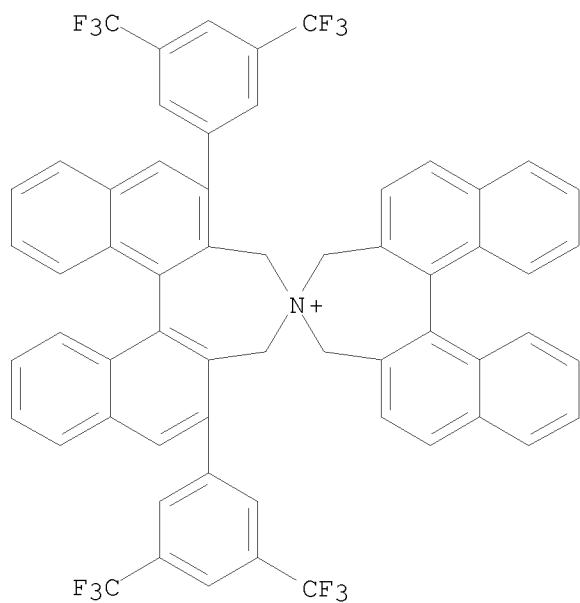
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bS,11'bS)-, thiocyanate (9CI) (CA INDEX NAME)

CM 1

CRN 344550-35-2

CMF C60 H36 F12 N

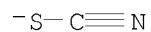
10/587,467



CM 2

CRN 302-04-5

CMF C N S



RN 438001-96-8 CAPLUS

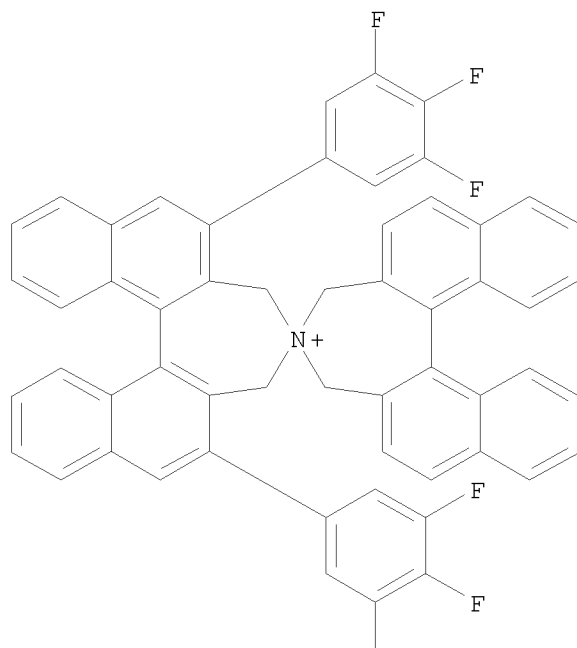
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis(3,4,5-trifluorophenyl)-, (11bS,11'bs)-,  
thiocyanate (9CI) (CA INDEX NAME)

CM 1

CRN 401846-45-5

CMF C56 H34 F6 N

PAGE 1-A

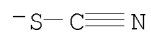


PAGE 2-A



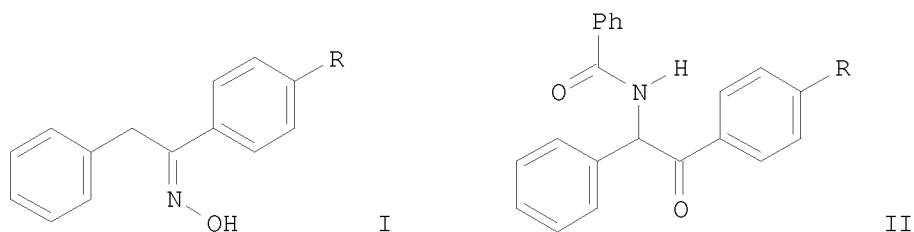
CM 2

CRN 302-04-5  
CMF C N S



OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD  
(2 CITINGS)

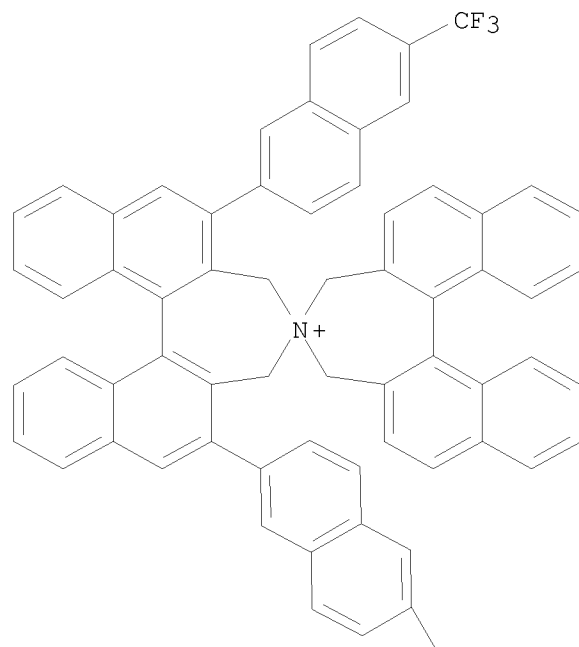
L29 ANSWER 54 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:422156 CAPLUS  
 DOCUMENT NUMBER: 137:154682  
 TITLE: Asymmetric Induction in the Neber Rearrangement of Simple Ketoxime Sulfonates under Phase-Transfer Conditions: Experimental Evidence for the Participation of an Anionic Pathway  
 AUTHOR(S): Ooi, Takashi; Takahashi, Makoto; Doda, Kanae; Maruoka, Keiji  
 CORPORATE SOURCE: Department of Chemistry Graduate School of Science, Kyoto University, Sakyo Kyoto, 606-8502, Japan  
 SOURCE: Journal of the American Chemical Society (2002), 124(26), 7640-7641  
 CODEN: JACSAT; ISSN: 0002-7863  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 137:154682  
 GI



AB Phase-transfer catalysis has been successfully utilized for the Neber rearrangement of simple ketoxime sulfonates. Thus, treatment of (Z)-oxime I (R = H) with 4-MeC<sub>6</sub>H<sub>4</sub>SO<sub>2</sub>Cl (1.2 equiv) in the presence of Bu<sub>4</sub>NBr (5 mol %) and MeOH (10 equiv) in toluene-50% KOH aqueous solution (volume ratio = 3:1) at 0° for 2 h. followed by benzoylation and acidic hydrolysis afforded the protected  $\alpha$ -amino ketone II in 80% isolated yield. Similar rearrangement under phase-transfer conditions, using a structurally rigid, C<sub>2</sub>-sym. chiral quaternary ammonium bromide as a catalyst, gave (S)-II (R = H) in 80% yield and with 51% ee. Enhanced enantioselectivity (63% ee) was observed in the rearrangement of the oxime sulfonate derived from (Z)-oxime I (R = F), and notably, use of mesitylene in place of toluene further increased the enantioselectivity to 70% ee. The reaction with (E)-isomer of I (R = H) afforded racemic II in 61% yield.

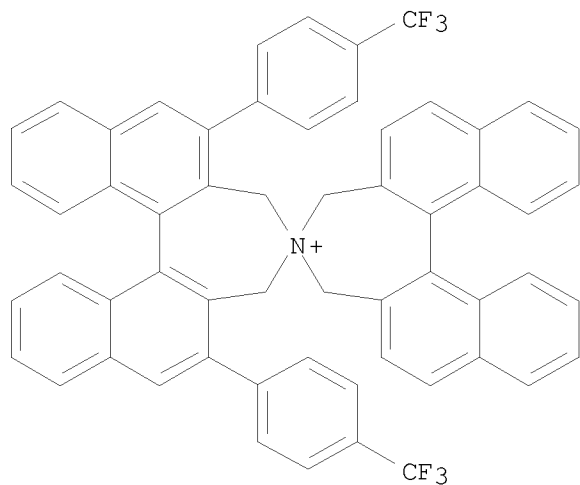
IT 446017-35-2 446017-36-3  
 RL: CAT (Catalyst use); USES (Uses)  
 (asym. synthesis of (amino)diaryl ketones via ketone oximation and quaternary ammonium bromide catalyzed Neber rearrangement of ketoxime sulfonates under phase-transfer conditions)

RN 446017-35-2 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis[6-(trifluoromethyl)-2-naphthalenyl]-,  
 bromide, (11bS,11'bS)- (9CI) (CA INDEX NAME)



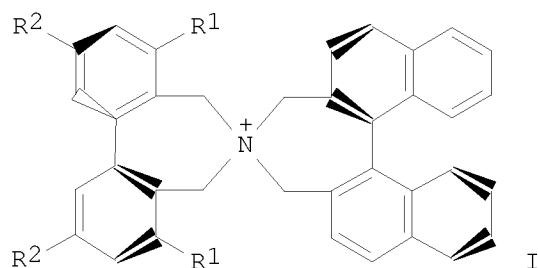
RN 446017-36-3 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-bis[4-(trifluoromethyl)phenyl]-, bromide,  
 (11bS,11'bS)- (9CI) (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT:	50	THERE ARE 50 CAPLUS RECORDS THAT CITE THIS RECORD (50 CITINGS)
REFERENCE COUNT:	26	THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 55 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:385687 CAPLUS  
 DOCUMENT NUMBER: 137:185143  
 TITLE: Conformationally flexible, chiral quaternary ammonium  
 bromides for asymmetric phase-transfer catalysis  
 AUTHOR(S): Ooi, Takashi; Uematsu, Yukitaka; Kameda, Minoru;  
 Maruoka, Keiji  
 CORPORATE SOURCE: Department of Chemistry Graduate School of Science,  
 Kyoto University, Kyoto, 606-8502, Japan  
 SOURCE: Angewandte Chemie, International Edition (2002),  
 41(9), 1551-1554  
 CODEN: ACIEF5; ISSN: 1433-7851  
 PUBLISHER: Wiley-VCH Verlag GmbH  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 137:185143  
 GI



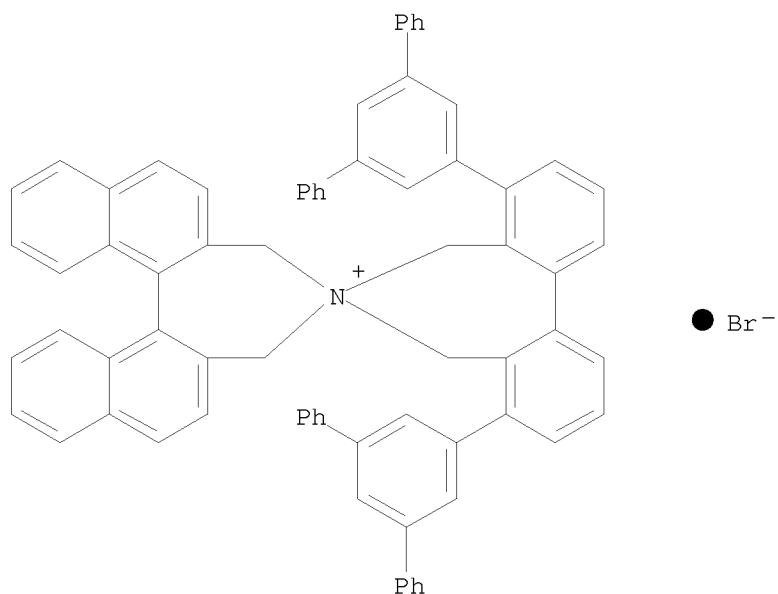
AB A simple yet powerful strategy for the mol. design of chiral  
 phase-transfer catalysts: conformationally flexible, N-spiro chiral  
 quaternary ammonium bromides (I.Br-) have been newly designed and are  
 found to exert high chiral efficiency by taking advantage of the  
 considerable difference of activity between the diastereomeric homo- and  
 heterochiral isomers through rapid conformational interconversion.

IT 452067-28-6  
 RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process);  
 PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
 (conformational anal.; conformationally flexible N-spiro chiral  
 binaphthyl/biphenyl quaternary ammonium bromides for asym.  
 phase-transfer catalysis)

RN 452067-28-6 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
 3',5,5',7-tetrahydro-4,8-bis([1,1':3',1''-terphenyl]-5'-yl)-, bromide,  
 (11'bs)- (CA INDEX NAME)



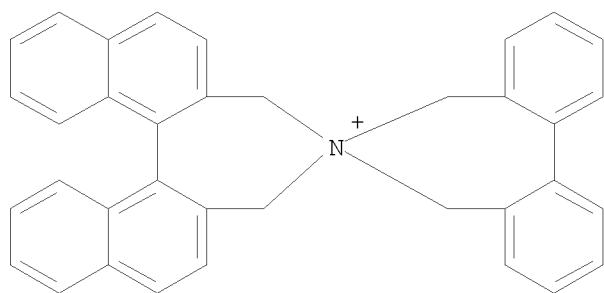


IT 452067-23-1 452067-24-2 452067-25-3  
452067-29-7

RL: CAT (Catalyst use); USES (Uses)  
(conformationally flexible N-spiro chiral binaphthyl/biphenyl  
quaternary ammonium bromides for asym. phase-transfer catalysis)

RN 452067-23-1 CAPLUS

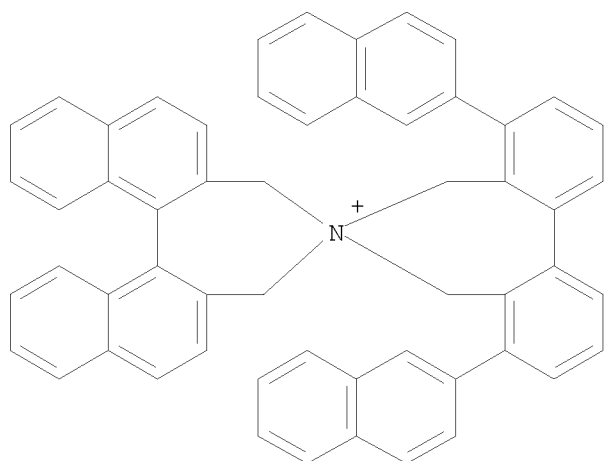
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-, bromide, (11'bS)- (CA INDEX NAME)



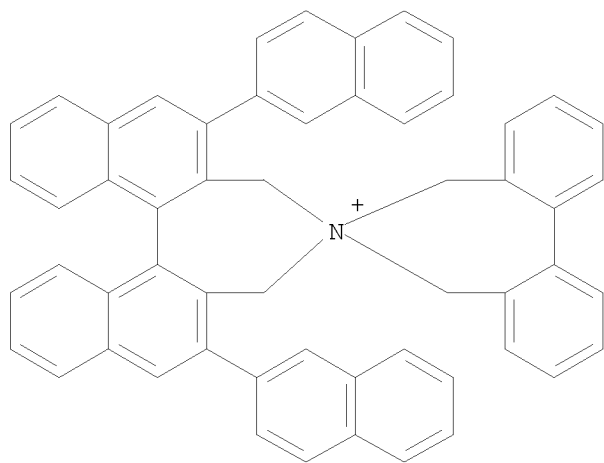
RN 452067-24-2 CAPLUS

CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-4,8-di-2-naphthalenyl-, bromide, (11'bS)- (CA INDEX  
NAME)

10/587,467

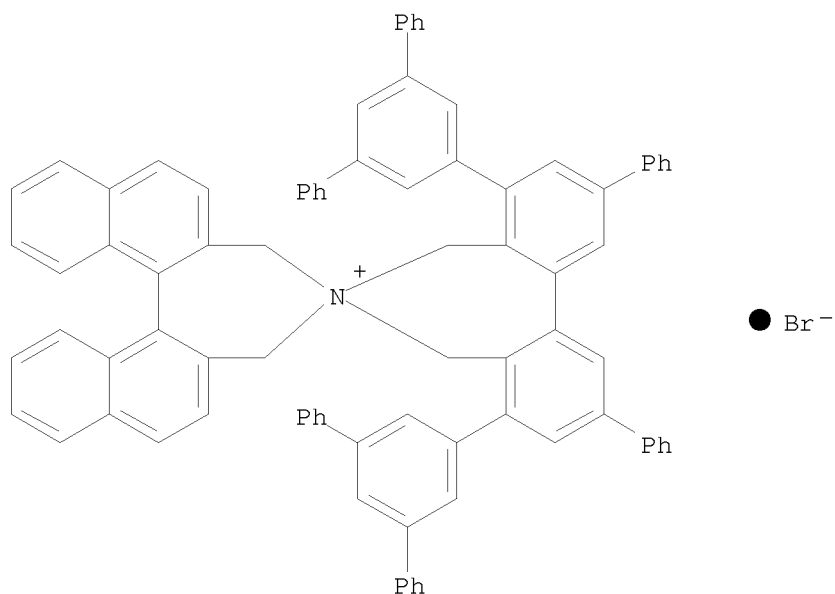


RN 452067-25-3 CAPLUS  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-2',6'-di-2-naphthalenyl-, bromide, (11'bS)- (9CI)  
(CA INDEX NAME)



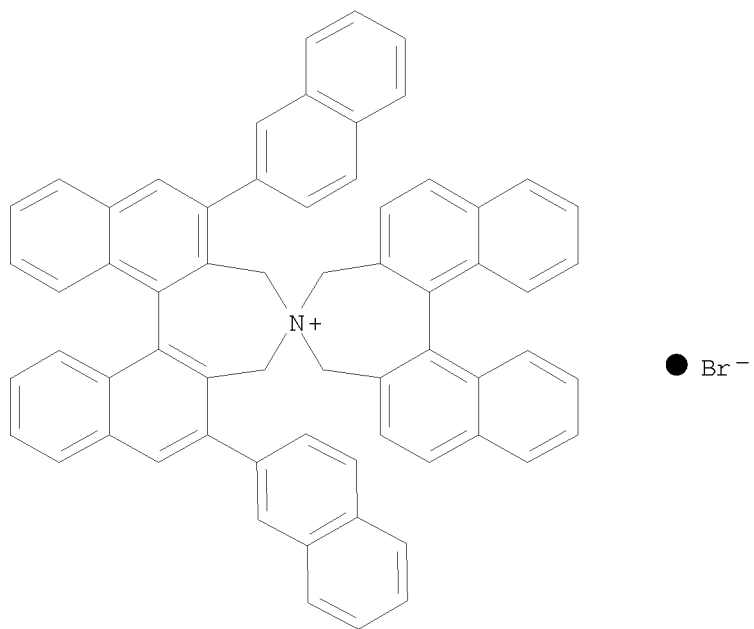
RN 452067-29-7 CAPLUS  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-2,10-diphenyl-4,8-bis([1,1':3',1''-terphenyl]-5'-yl)-  
, bromide, (11'bS)- (CA INDEX NAME)

10/587,467

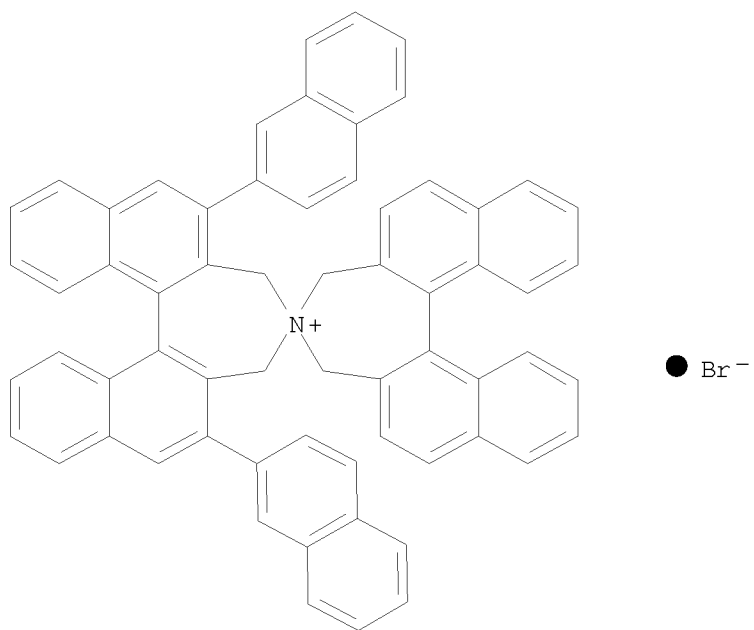


IT 452067-26-4 452067-27-5  
 RL: CAT (Catalyst use); USES (Uses)  
 (heterochiral catalyst, low ee; conformationally flexible N-spiro  
 chiral binaphthyl/biphenyl quaternary ammonium bromides for asym.  
 phase-transfer catalysis)  
 RN 452067-26-4 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
 3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, bromide, (11bR,11'bS)- (CA  
 INDEX NAME)

10/587,467



RN 452067-27-5 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, bromide, (11bS,11'bR)- (9CI)  
(CA INDEX NAME)



OS.CITING REF COUNT: 80 THERE ARE 80 CAPLUS RECORDS THAT CITE THIS  
RECORD (80 CITINGS)

10/587,467

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 56 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2001:905551 CAPLUS

DOCUMENT NUMBER: 136:294340

TITLE: Esterification of carboxylic acids catalyzed by in situ generated tetraalkylammonium fluorides

AUTHOR(S): Ooi, Takashi; Sugimoto, Hayato; Doda, Kanae; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry, Graduate School of Science, Kyoto University, Sakyo, Kyoto, 606-8502, Japan

SOURCE: Tetrahedron Letters (2001), 42(52), 9245-9248

CODEN: TELEAY; ISSN: 0040-4039

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 136:294340

AB Esterification of carboxylic acids with alkyl halides can be efficiently catalyzed by Bu<sub>4</sub>NF (TBAF) generated in situ from Bu<sub>4</sub>N hydrogen sulfate (TBAHSO<sub>4</sub>) and KF·2H<sub>2</sub>O in THF. The general applicability and the characteristic feature of this approach was amply demonstrated.

IT 344550-36-3

RL: CAT (Catalyst use); USES (Uses)

(esterification of carboxylic acids catalyzed by in situ generated tetraalkylammonium fluorides)

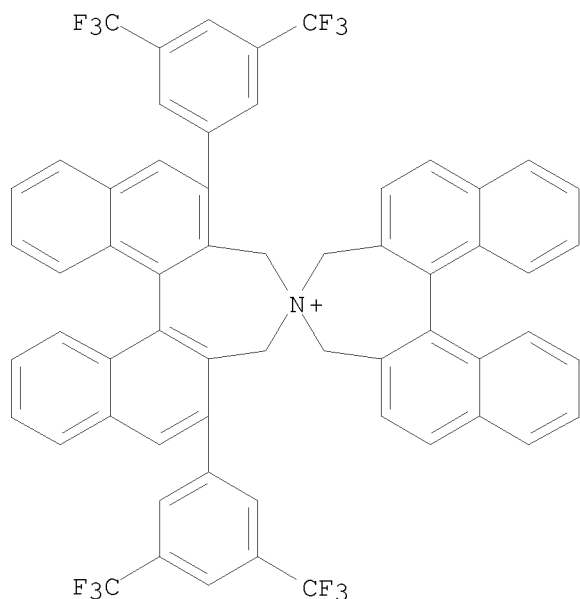
RN 344550-36-3 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bS,11'bS)-, sulfate (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 344550-35-2

CMF C60 H36 F12 N

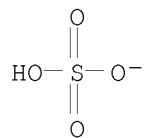


10/587,467

CM 2

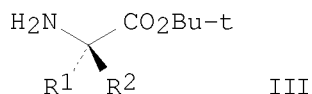
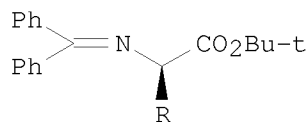
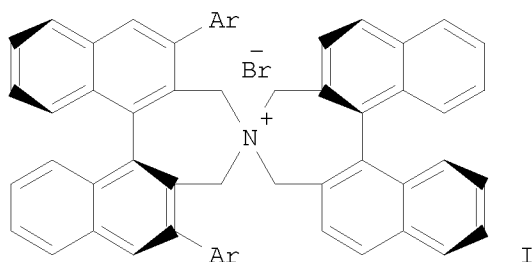
CRN 14996-02-2

CMF H 04 S



OS.CITING REF COUNT:	14	THERE ARE 14 CAPLUS RECORDS THAT CITE THIS RECORD (14 CITINGS)
REFERENCE COUNT:	15	THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 57 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2001:872313 CAPLUS  
 DOCUMENT NUMBER: 136:200448  
 TITLE: Design of new, chiral phase-transfer catalysts for practical, catalytic asymmetric synthesis  
 AUTHOR(S): Maruoka, Keiji  
 CORPORATE SOURCE: Graduate School of Science, Department of Chemistry, Kyoto University, Kyoto, 606-8502, Japan  
 SOURCE: Journal of Fluorine Chemistry (2001), 112(1), 95-99  
 CODEN: JFLCAR; ISSN: 0022-1139  
 PUBLISHER: Elsevier Science S.A.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 136:200448  
 GI



AB Structurally rigid, chiral spiro ammonium salts I [Ar = H, Ph,  $\beta$ -naphthyl, 3,4,5-trifluorophenyl; derived from com. available (S)-binaphthol] have been designed as new C2-sym. chiral phase-transfer catalysts. I was successfully applied to the highly efficient, catalytic enantioselective alkylation of tert-Bu glycinate Schiff base under mild phase-transfer conditions to furnish  $\alpha$ -alkyl- $\alpha$ -amino acids II (R = CH<sub>2</sub>Ph, Me, Et, CH<sub>2</sub>CH:CH<sub>2</sub>, CH<sub>2</sub>C.tplbond.CH, CH<sub>2</sub>C<sub>6</sub>H<sub>4</sub>Me-4, CH<sub>2</sub>C<sub>6</sub>H<sub>4</sub>F-4, 1-naphthylmethyl) and  $\alpha,\alpha$ -dialkyl- $\alpha$ -amino acids III [R<sub>1</sub> = CH<sub>2</sub>CH:CH<sub>2</sub>, CH<sub>2</sub>Ph; R<sub>2</sub> = CH<sub>2</sub>Ph, CH<sub>2</sub>C(Me):CH<sub>2</sub>, CH<sub>2</sub>C.tplbond.CH, CH<sub>2</sub>CH:CH<sub>2</sub>] with excellent enantioselectivity. In addition, quaternary ammonium salts Bu<sub>4</sub>N<sup>+</sup>X<sup>-</sup> (X = I, Br, OTf, etc.) have been utilized for the in situ generation of chiral quaternary ammonium fluorides Bu<sub>4</sub>N<sup>+</sup>F<sup>-</sup>.

IT 344550-36-3 344550-38-5 401846-46-6  
 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
 (anion exchange-mediated preparation of quaternary ammonium fluoride salts as phase transfer catalysts for asym. aldol condensation reactions)

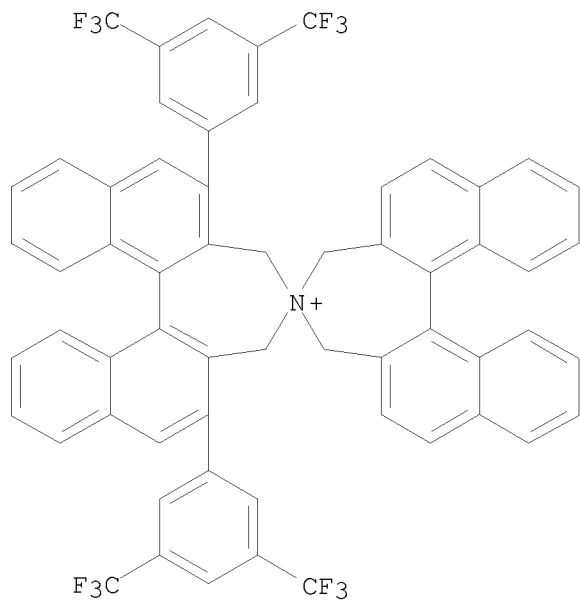
RN 344550-36-3 CAPLUS  
 CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium], 2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-, (11bS,11'bS)-, sulfate (1:1) (9CI) (CA INDEX NAME)

CM 1



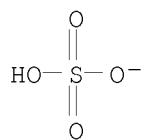
10/587,467

CRN 344550-35-2  
CMF C60 H36 F12 N



CM 2

CRN 14996-02-2  
CMF H O4 S

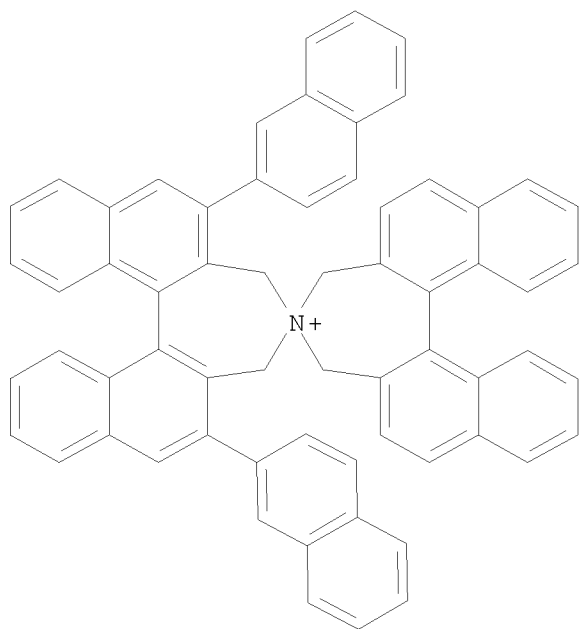


RN 344550-38-5 CAPLUS  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, (11bS,11'bS)-, sulfate (1:1)  
(9CI) (CA INDEX NAME)

CM 1

CRN 344550-37-4  
CMF C64 H44 N

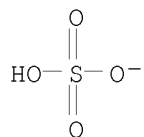
10/587,467



CM 2

CRN 14996-02-2

CMF H O4 S



RN 401846-46-6 CAPLUS

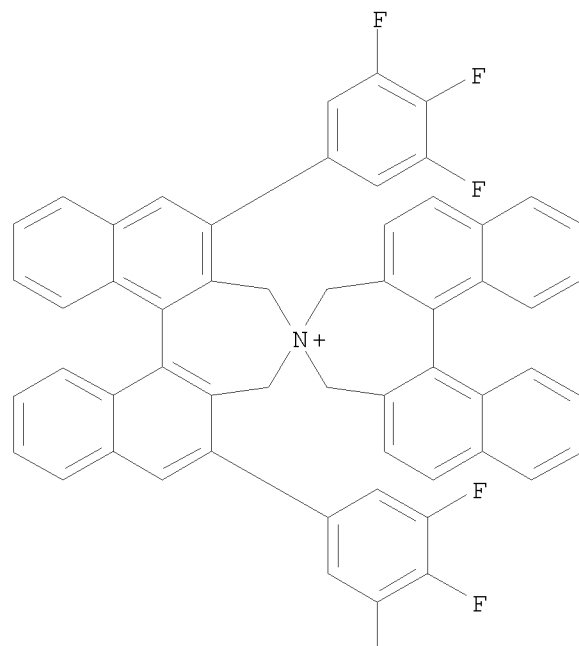
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis(3,4,5-trifluorophenyl)-, stereoisomer,  
sulfate (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 401846-45-5

CMF C56 H34 F6 N

PAGE 1-A



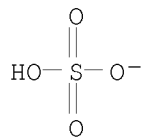
PAGE 2-A



CM 2

CRN 14996-02-2

CMF H O4 S



OS.CITING REF COUNT:	23	THERE ARE 23 CAPLUS RECORDS THAT CITE THIS RECORD (23 CITINGS)
REFERENCE COUNT:	23	THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 58 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2001:815020 CAPLUS

DOCUMENT NUMBER: 136:128305

TITLE: Electrochemical recognition of charged species using quaternary ammonium binaphthyl salts

AUTHOR(S): Abbott, Andrew P.; Barker, George W.; Lonergan, Gillian R.; Walter, Andrew J.; Kocovsky, Pavel

CORPORATE SOURCE: Department of Chemistry, University of Leicester, Leicester, LE1 7RH, UK

SOURCE: Analyst (Cambridge, United Kingdom) (2001), 126(11), 1892-1896

CODEN: ANALAO; ISSN: 0003-2654

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The effects of ionic analytes on the electrochem. properties of quaternary ammonium binaphthyl salts are described. The stability of the binaphthyl radicals and hence the reversibility of the electrochem. response are discussed in terms of mol. structure. The ability of azacrown derivatized binaphthyl salts to act as amperometric receptors is ascribed to the strain imparted in the cyclic ammonium ring when Li<sup>+</sup> ions complex with them. Also the redox properties of quaternary ammonium binaphthyl salts are pH dependent in aqueous solns., but reversible redox properties can be observed in extremely basic solns. The effect of anions binding to the quaternary ammonium cation can be seen in the redox properties of the binaphthyl moiety and the use of a chiral binding site for enantiomeric recognition is also demonstrated.

IT 86593-80-8 86631-57-4 143970-97-2

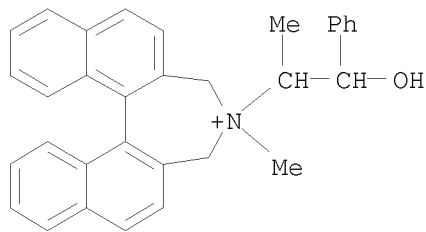
222613-29-8

RL: ARU (Analytical role, unclassified); PRP (Properties); ANST (Analytical study)

(electrochem. recognition of charged species using quaternary ammonium binaphthyl salts)

RN 86593-80-8 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)

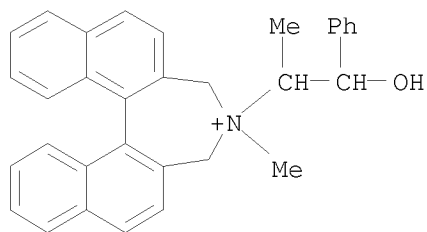
● Br<sup>-</sup>

RN 86631-57-4 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,

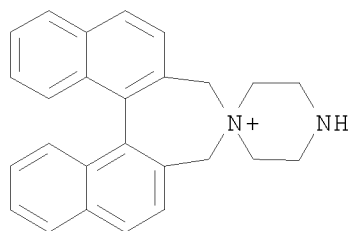
10/587,467

bromide, (11bR)- (9CI) (CA INDEX NAME)



RN 143970-97-2 CAPLUS

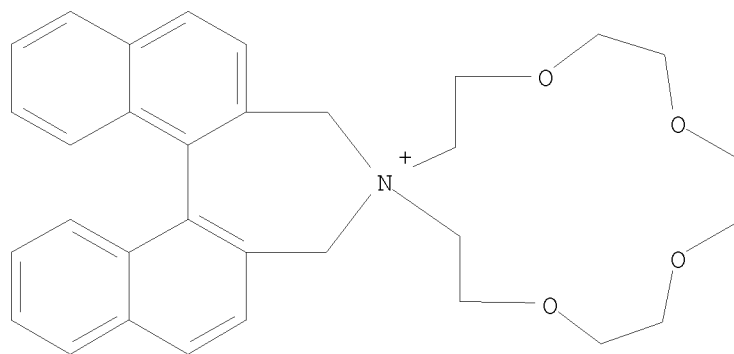
CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,1'-piperazinium], 7,9-dihydro-, bromide (1:1) (CA INDEX NAME)



RN 222613-29-8 CAPLUS

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,13'-[1,4,7,10]tetraoxa[13]azacyclopentadecanium], 7,9-dihydro-, bromide (1:1) (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT:	2	THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)
REFERENCE COUNT:	22	THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 59 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2001:247767 CAPLUS

DOCUMENT NUMBER: 135:45952

TITLE: Distinct Advantage of the in Situ Generation of Quaternary Ammonium Fluorides under Phase-Transfer Conditions toward Catalytic Asymmetric Synthesis

AUTHOR(S): Ooi, Takashi; Doda, Kanae; Maruoka, Keiji

CORPORATE SOURCE: Department of Chemistry Graduate School of Science, Kyoto University, Sakyo Kyoto, 606-8502, Japan

SOURCE: Organic Letters (2001), 3(9), 1273-1276

CODEN: ORLEF7; ISSN: 1523-7060

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 135:45952

AB Quaternary ammonium fluorides were found to be efficiently generated in situ from ammonium hydrogen sulfates by treatment with com. available potassium fluoride dihydrate (KF·2H<sub>2</sub>O) in THF and were directly used as a fluoride source for the generation of carbon nucleophiles from organosilicon compds. This method can be successfully applied to the preparation of structurally well-defined, C<sub>2</sub>-sym. chiral quaternary ammonium fluorides, thereby allowing catalytic enantioselective Mukaiyama-type aldol reactions under mild conditions.

IT 344550-36-3 344550-38-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(advantage of in situ generation of quaternary ammonium fluorides under phase-transfer conditions toward catalytic asym. synthesis)

RN 344550-36-3 CAPLUS

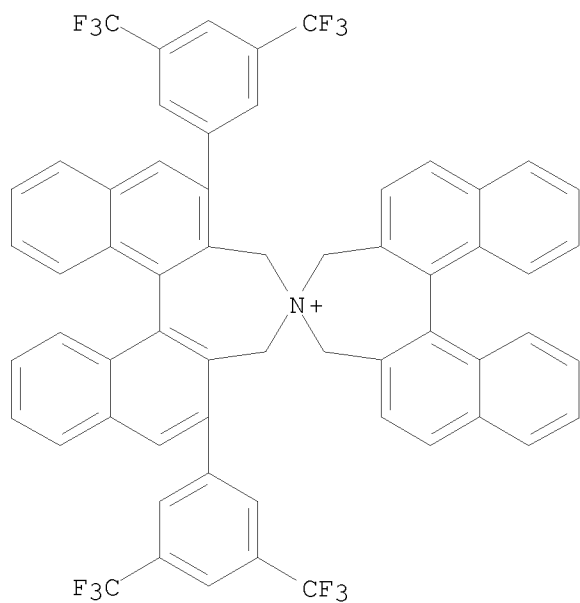
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bS,11'bS)-, sulfate (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 344550-35-2

CMF C60 H36 F12 N

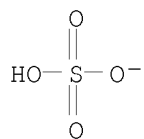
10/587,467



CM 2

CRN 14996-02-2

CMF H O4 S



RN 344550-38-5 CAPLUS

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, (11bS,11'bS)-, sulfate (1:1)  
(9CI) (CA INDEX NAME)

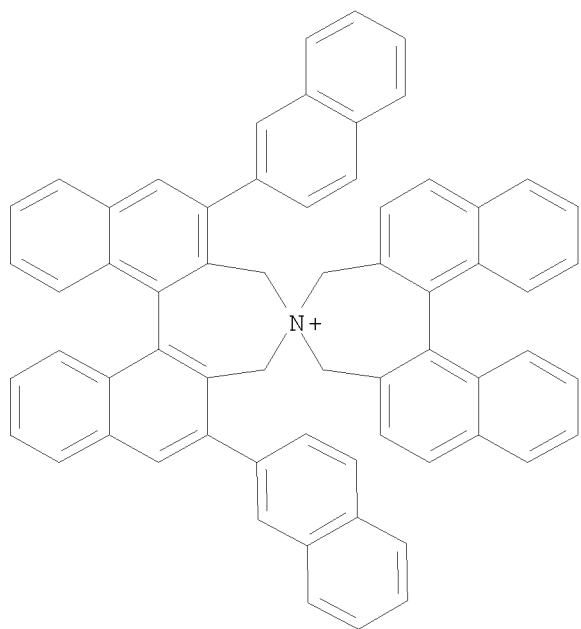
CM 1

CRN 344550-37-4

CMF C64 H44 N



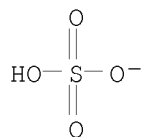
10/587,467



CM 2

CRN 14996-02-2

CMF H O4 S

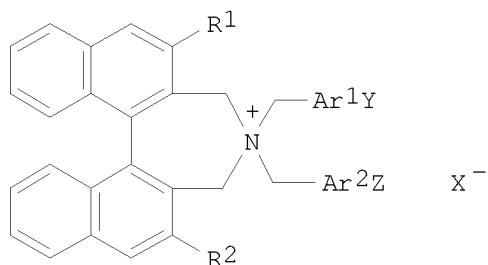


OS.CITING REF COUNT:	50	THERE ARE 50 CAPLUS RECORDS THAT CITE THIS RECORD (50 CITINGS)
REFERENCE COUNT:	29	THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

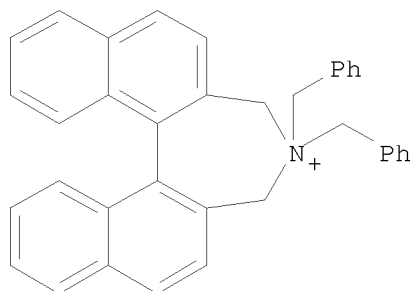
10/587,467

L29 ANSWER 60 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2001:124168 CAPLUS  
DOCUMENT NUMBER: 134:178476  
TITLE: Preparation of optically active azepinium compounds  
having asymmetric axis and  $\alpha$ -amino acids by  
using them  
INVENTOR(S): Maruoka, Keiji  
PATENT ASSIGNEE(S): Nagase and Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 37 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001048866	A	20010220	JP 2000-121825	20000421
US 6340753	B1	20020122	US 2000-616361	20000713
WO 2001081349	A1	20011101	WO 2001-JP3373	20010419
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1277755	A1	20030122	EP 2001-921928	20010419
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 20020065414	A1	20020530	US 2001-987547	20011115
US 20020103374	A1	20020801	US 2001-987544	20011115
US 6441231	B2	20020827		
PRIORITY APPLN. INFO.:			JP 1999-158812	A 19990604
			JP 2000-121825	A 20000421
			US 2000-616361	A3 20000713
			WO 2001-JP3373	W 20010419
OTHER SOURCE(S):		CASREACT 134:178476; MARPAT 134:178476		
GI				

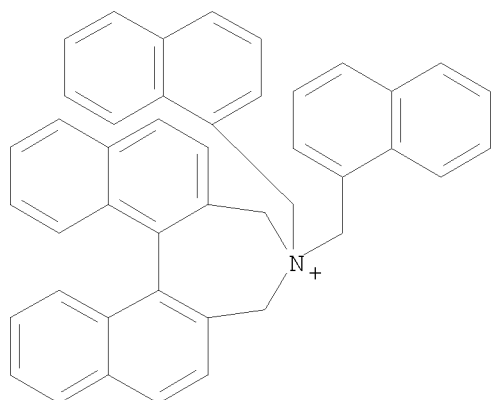


- AB Title compds. I [R1, R2 = H, C1-6 alkyl, C2-6 alkenyl, C2-6 alkynyl, (un)substituted aralkyl, etc.; Ar1, Ar2 = (un)substituted aryl, heteroaryl, etc.; Y, Z = H, halo, C1-4 alkyl, C1-3 alkoxy, etc.] are prepared R6C:R7NCR5R8CO2R9 [R5 = C1-6 alkyl, (un)substituted C3-9 aryl, aralkyl, etc.; R6, R7 = H, (un)substituted aryl; all of R6-R7 are not H; R8 = H, (un)substituted aryl, aralkyl; R9 = C1-4 alkyl] are stereoselectively prepared by reaction of R6C:R7NCHR8CO2R9 (R6-R9 = same as above) with R5W (R5 = same as above; W = leaving group) in the presence of I as phase-transfer catalysts. (S)-3,5-dihydro-4H-[2,1-c:1',2'-e]azepine was cyclized with (S)-1,1'-bi-2-(bromomethyl)-3-( $\beta$ -naphthyl)naphthyl in MeOH in the presence of K2CO3 under reflux for 30 min to give 36% [(S)-3,3'-di( $\beta$ -naphthyl)-1,1'-binaphthyl-2,2'-dimethylammonium]spiro[(S)-1,1'-binaphthyl-2,2'-dimethylamine] bromide. Reaction of Ph2C:NCH2CO2Bu-tert with PhCH2Br in the presence of the compds. prepared above gave 95% (S)-phenylalanine tert-Bu ester benzophenone Schiff base.
- IT 237762-38-8P 237762-39-9P 326793-15-1P  
 RL: CAT (Catalyst use); IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation of optically active azepinium compds. as alkylation catalyst for preparing amino acids)
- RN 237762-38-8 CAPLUS
- CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-bis(phenylmethyl)-, bromide (1:1), (11bS)- (CA INDEX NAME)



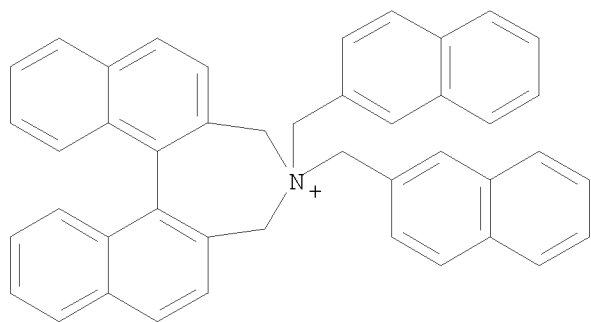
- RN 237762-39-9 CAPLUS
- CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-bis(1-naphthalenylmethyl)-, bromide, (11bS)- (9CI) (CA INDEX NAME)

10/587,467



● Br<sup>-</sup>

RN 326793-15-1 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-bis(2-naphthalenylmethyl)-, bromide, (11bS)- (9CI) (CA  
INDEX NAME)



● Br<sup>-</sup>

OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD  
(19 CITINGS)

L29 ANSWER 61 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2000:633110 CAPLUS

DOCUMENT NUMBER: 133:230652

TITLE: (M)- and (P)-8-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-8-methyl-8,9-dihydro-7H-dinaphth[2,1-c:1',2'-e]azepinium bromide solvates

AUTHOR(S): Schneider, Monica; Linden, Anthony; Rippert, Andreas  
CORPORATE SOURCE: Institute of Organic Chemistry, University of Zurich, Zurich, CH-8057, Switz.SOURCE: Acta Crystallographica, Section C: Crystal Structure Communications (2000), C56(8), 1004-1006  
CODEN: ACSCEE; ISSN: 0108-2701

PUBLISHER: Munksgaard International Publishers Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The title compds. are diastereoisomers with antipodean axial chirality. The M isomer crystallizes as a 1/3 acetone solvate, C<sub>32</sub>H<sub>30</sub>NO<sup>+</sup>·Br<sup>-</sup>·3C<sub>3</sub>H<sub>6</sub>O, while the P isomer crystallizes as a 1/1 CH<sub>2</sub>Cl<sub>2</sub> solvate, C<sub>32</sub>H<sub>30</sub>NO<sup>+</sup>·Br<sup>-</sup>·CH<sub>2</sub>Cl<sub>2</sub>. In each structure, O-H...Br H bonds link the cations and anions to give ion pairs. The seven-membered azepinium ring adopts the usual twisted-boat conformation and its ring strain causes a slight curvature of the plane of each naphthyl ring. Crystallog. data are given.IT 292066-97-8, (M)-8-[(1S,2R)-2-Hydroxy-1-methyl-2-phenylethyl]-8-methyl-8,9-dihydro-7H-dinaphth[2,1-c:1',2'-e]azepinium bromide acetone solvate (1:3) 292066-98-9, (P)-8-[(1S,2R)-2-Hydroxy-1-methyl-2-phenylethyl]-8-methyl-8,9-dihydro-7H-dinaphth[2,1-c:1',2'-e]azepinium bromide dichloromethane solvate (1:1)  
RL: PRP (Properties)  
(crystal structure of)

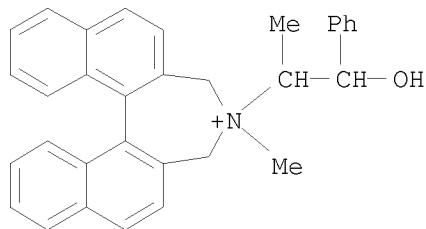
RN 292066-97-8 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1R,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bR)-, compd. with 2-propanone (1:3) (9CI) (CA INDEX NAME)

CM 1

CRN 86631-57-4

CMF C32 H30 N O . Br

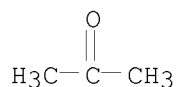


10/587,467

CM 2

CRN 67-64-1

CMF C3 H6 O



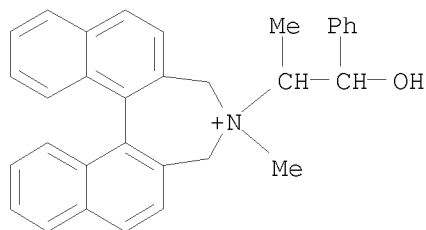
RN 292066-98-9 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1R,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bS)-, compd. with dichloromethane (1:2) (9CI) (CA INDEX NAME)

CM 1

CRN 86593-80-8

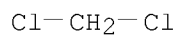
CMF C32 H30 N O . Br



CM 2

CRN 75-09-2

CMF C H2 Cl2



OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD  
(3 CITINGS)  
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 62 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1999:529809 CAPLUS

DOCUMENT NUMBER: 131:271531

TITLE: Conformational Study of 2,2'-Homosubstituted  
1,1'-Binaphthyls by Means of UV and CD SpectroscopyAUTHOR(S): Di Bari, Lorenzo; Pescitelli, Gennaro; Salvadori,  
PieroCORPORATE SOURCE: Centro di Studio del CNR per le Macromolecole  
Stereordinate e Otticamente Attive Dipartimento di  
Chimica e Chimica Industriale, Universita degli Studi  
di Pisa, Pisa, I-56126, ItalySOURCE: Journal of the American Chemical Society (1999),  
121(35), 7998-8004

CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The dihedral angle  $\theta$  of 1,1'-binaphthyl derivs. is quant. related to  
the wavelength splitting  $\Delta\lambda_{\text{max}}$  of the 220 nm couplet of the  
CD spectra. This relation is almost independent of measurement conditions  
(solvent, concentration). Its reliability has been quite successfully tested

on

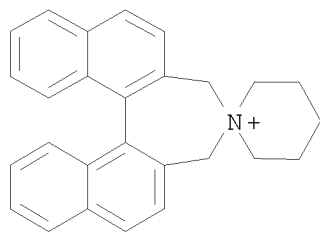
about 10 compds. derived from 2,2'-dimethyl-1,1'-binaphthyl. A simple and  
versatile method for the conformational assessment of this class of  
compds. is reported.

IT 54113-61-0

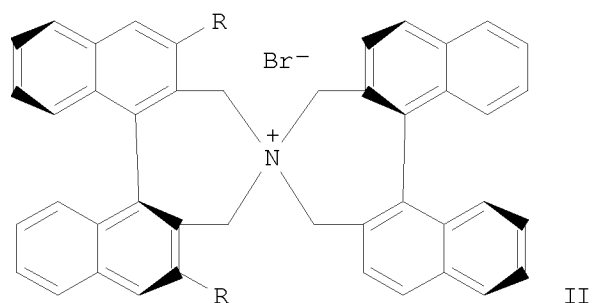
RL: PRP (Properties)

(the dihedral angle of 1,1'-binaphthyl derivs. is quant. related to the  
Davydov splitting of the 220 nm couplet of the CD spectra)

RN 54113-61-0 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium], 3,5-dihydro-,  
(11bS)- (9CI) (CA INDEX NAME)OS.CITING REF COUNT: 61 THERE ARE 61 CAPLUS RECORDS THAT CITE THIS  
RECORD (63 CITINGS)REFERENCE COUNT: 78 THERE ARE 78 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 63 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1999:436506 CAPLUS  
 DOCUMENT NUMBER: 131:157942  
 TITLE: Molecular Design of a C2-Symmetric Chiral  
 Phase-Transfer Catalyst for Practical Asymmetric  
 Synthesis of  $\alpha$ -Amino Acids  
 AUTHOR(S): Ooi, Takashi; Kameda, Minoru; Maruoka, Keiji  
 CORPORATE SOURCE: Department of Chemistry Graduate School of Science,  
 Hokkaido University, Sapporo, 060-0810, Japan  
 SOURCE: Journal of the American Chemical Society (1999),  
 121(27), 6519-6520  
 CODEN: JACSAT; ISSN: 0002-7863  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 131:157942  
 GI



AB The authors report the synthesis of a C2-sym. chiral quaternary ammonium salt and its successful application in a highly efficient enantioselective alkylation of tert-Bu glycinate-benzophenone Schiff base (I) under mild phase-transfer conditions. Structurally more rigid chiral spiro ammonium salts [(II); R = H, Ph, 2-naphthyl] were synthesized and used. Catalyst II (R = 2-naphthyl) gave enantio-selectivities generally exceeding 90% ee for alkylation of I with a variety of alkyl halides.

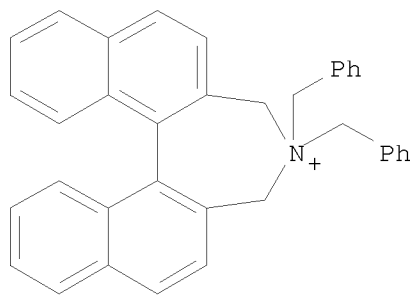
IT 237762-38-8P 237762-39-9P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
 USES (Uses)  
 (preparation of as C2-sym. chiral phase-transfer catalyst for practical  
 asym. synthesis of  $\alpha$ -amino acids)

RN 237762-38-8 CAPLUS

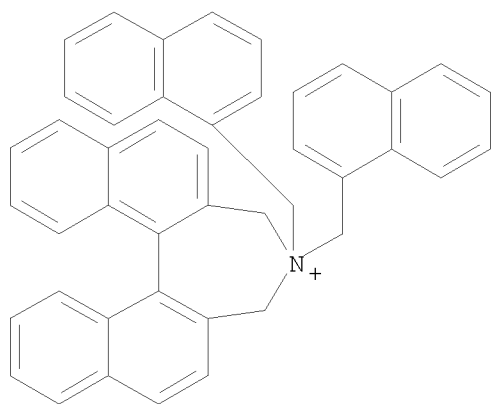
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-bis(phenylmethyl)-,  
 bromide (1:1), (11bS)- (CA INDEX NAME)



10/587,467



RN 237762-39-9 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-bis(1-naphthalenylmethyl)-, bromide, (11bS)- (9CI) (CA  
INDEX NAME)



OS.CITING REF COUNT: 227 THERE ARE 227 CAPLUS RECORDS THAT CITE THIS  
RECORD (230 CITINGS)  
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 64 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1999:209628 CAPLUS

DOCUMENT NUMBER: 130:290731

TITLE: Electrochemistry of quaternary ammonium binaphthyl salts

AUTHOR(S): Abbott, Andrew P.; Cheung, Cherie S. M.; Lonergan, Gillian R.; Kocovsky, Pavel; Stara, Irena G.; Stary, Ivo

CORPORATE SOURCE: Department of Chemistry, University of Leicester, Leicester, LE1 7RH, UK

SOURCE: Chemical Communications (Cambridge) (1999), (7), 641-642

CODEN: CHCOFS; ISSN: 1359-7345

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The redox behavior of the binaphthyl unit in quaternary ammonium salts with an appended crown ether is dramatically affected by the presence of metal cations, and this effect can be used as an anal. tool to detect micromolar concns. of alkali metal ions.

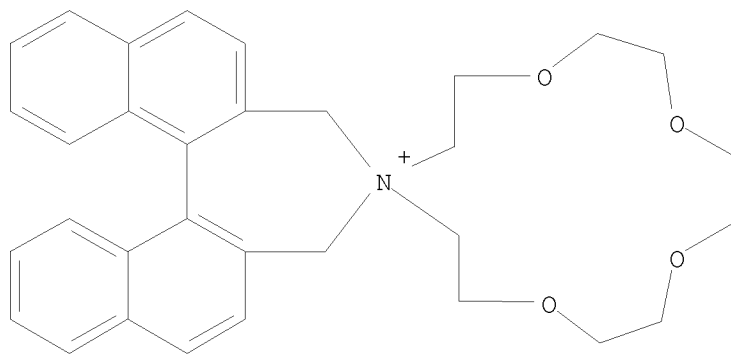
IT 222613-29-8

RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical study); USES (Uses)

(electrochem. of quaternary ammonium binaphthyl salts and determination of alkali metals)

RN 222613-29-8 CAPLUS

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,13'-[1,4,7,10]tetraoxa[13]azacyclopentadecanium], 7,9-dihydro-, bromide (1:1) (CA INDEX NAME)



OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 65 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1995:419364 CAPLUS

DOCUMENT NUMBER: 123:83191

ORIGINAL REFERENCE NO.: 123:14885a,14888a

TITLE: Synthesis of axially dissymmetric chiral ammonium salts by quaternization of secondary amines with (R)-(+)-2,2'-bis(bromomethyl)-6,6'-dinitrobiphenyl and (R)-(+)-2,2'-bis(bromomethyl)-1,1'-binaphthyl and an examination of their abilities as chiral phase-transfer catalysts

AUTHOR(S): Shi, Min; Itoh, Nobuhiro; Masaki, Yukio

CORPORATE SOURCE: Gifu Pharm. Univ., Gifu, 502, Japan

SOURCE: Journal of Chemical Research, Synopses (1995), (2), 46-7

CODEN: JRPSDC; ISSN: 0308-2342

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 123:83191

AB Chiral quaternary ammonium salts were prepared from the reaction of (R)-(+)-2,2'-bis(bromomethyl)-6,6'-dinitrobiphenyl and (R)-(+)-2,2'-bis(bromomethyl)-1,1'-binaphthyl with some secondary amines and observed to exhibit activity in chiral induction in the epoxidn. of chalcone (e.e. = 1.3-7.5%) and the Darzens condensation of benzaldehyde and phenacyl chloride (e.e. = 1.6-2.0%) under phase-transfer conditions.

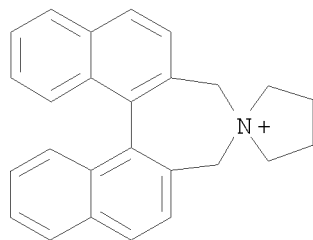
IT 164856-70-6P 164856-71-7P 165035-95-0P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation of quaternized dibenzazepine and dinaphthazepine as phase transfer catalysts)

RN 164856-70-6 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-pyrrolidinium], 3,5-dihydro-, bromide, (R)- (9CI) (CA INDEX NAME)

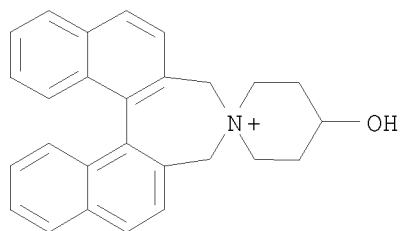


● Br<sup>-</sup>

RN 164856-71-7 CAPLUS

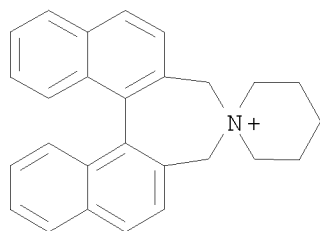
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium], 3,5-dihydro-4'-hydroxy-, bromide, (R)- (9CI) (CA INDEX NAME)

10/587,467



RN 165035-95-0 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium], 3,5-dihydro-,  
bromide, (R)- (9CI) (CA INDEX NAME)



OS.CITING REF COUNT: 4

THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD  
(4 CITINGS)

L29 ANSWER 66 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1994:557262 CAPLUS

DOCUMENT NUMBER: 121:157262

ORIGINAL REFERENCE NO.: 121:28464h,28465a

TITLE: Stereochemical Dichotomy in the Stevens Rearrangement of Axially Twisted Dihydroazepinium and Dihydrothiepinium Salts. A Novel Enantioselective Synthesis of Pentahelicene

AUTHOR(S): Stara, Irena G.; Stary, Ivo; Tichy, Milos; Zavada, Jiri; Hanus, Vladimir

CORPORATE SOURCE: Institute of Organic Chemistry and Biochemistry, Prague, 166 10, Czech Rep.

SOURCE: Journal of the American Chemical Society (1994), 116(12), 5084-8

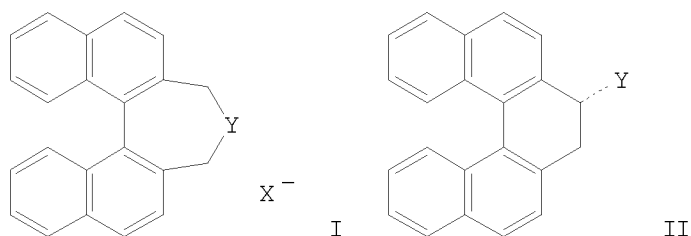
CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 121:157262

GI



AB Evidence is presented indicating that the stereochem. of the Stevens rearrangement of the axially chiral onium salts I [Y = NMe<sub>2</sub>, NMeBu, NMeCHMe<sub>2</sub>, X = halide (1a-c, resp.); Y = SMe, X = ClO<sub>4</sub> (1d)] is dramatically structure-dependent. Thus, the binaphthyl ammonium salts (S)-(+)-1a-c react with a strong base with exclusive (100% de) formation of the corresponding rearranged amines (R,3R)-(+)-2a-c (II), demonstrating a complete transfer of the (S) axial dissymmetry/asymmetry into (R) asymmetry of the newly formed carbon center. Exactly opposite stereochem. was established by K. J. Mislow et al. (1968) of an (S)-(+)-biphenyl analog, which yielded rearranged products with exclusive (S) configuration at the carbon center. Rearrangement of the sulfonium salt 1d is intermediate between the two extremes, yielding a mixture of diastereoisomeric (R,3R) (2d) and (R,3S) products. A direct proof is thus provided that two stereochem. different pathways can participate in the Stevens rearrangement. An explanation is suggested in terms of competition between suprafacial (concerted) and antarafacial (nonconcerted) mechanism. Treatment of 1a with BuLi in THF afforded 87% (P)-(+)-dibenzo[c,g]phenanthrene.

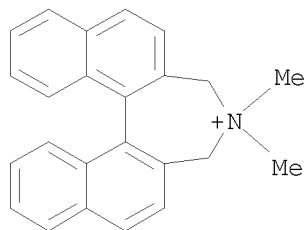
IT 97781-19-6 145901-04-8 145901-05-9  
145986-80-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
(Stevens rearrangement of, stereochem. of)

RN 97781-19-6 CAPLUS

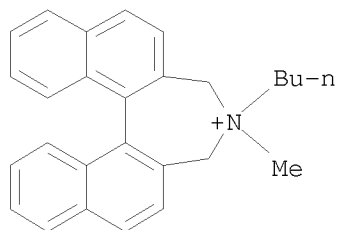
CN 7H-Dinaphth[2,1-c:1',2'-e]azepinium, 8,9-dihydro-8,8-dimethyl-, bromide (1:1) (CA INDEX NAME)

10/587,467



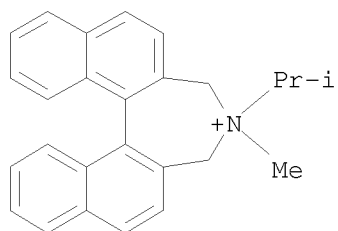
RN 145901-04-8 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4-butyl-4,5-dihydro-4-methyl-,  
bromide, stereoisomer (9CI) (CA INDEX NAME)



RN 145901-05-9 CAPLUS

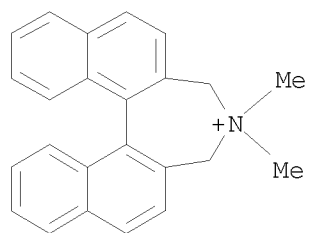
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-methyl-4-(1-methylethyl)-, iodide, stereoisomer (9CI) (CA  
INDEX NAME)



10/587,467

RN 145986-80-7 CAPLUS

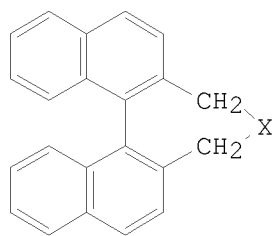
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-dimethyl-, iodide,  
(S)- (9CI) (CA INDEX NAME)



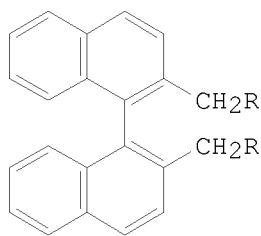
OS.CITING REF COUNT: 37 THERE ARE 37 CAPLUS RECORDS THAT CITE THIS  
RECORD (39 CITINGS)

L29 ANSWER 67 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1994:270072 CAPLUS  
 DOCUMENT NUMBER: 120:270072  
 ORIGINAL REFERENCE NO.: 120:47835a,47838a  
 TITLE: Nucleophilic Attack on  
 4,5-Dihydro-4-alkyl-3H-dinaphtho[2,1-c:1',2'-  
 e]thiepinium Salts. A Convenient Approach to New  
 2,2'-Bidentate 1,1'-Binaphthalene Ligands with Sulfur  
 Donor Atoms  
 AUTHOR(S): Stara, Irena G.; Stary, Ivo; Tichy, Milos; Zavada,  
 Jiri; Fiedler, Pavel  
 CORPORATE SOURCE: Institute of Organic Chemistry and Biochemistry,  
 Academy of Sciences of the Czech Republic, Prague,  
 166 10, Czech Rep.  
 SOURCE: Journal of Organic Chemistry (1994), 59(6), 1326-32  
 CODEN: JOCEAH; ISSN: 0022-3263  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 120:270072  
 GI



I



II

AB The title dihydrothiepinium salts I ( $X = S+MeI^-$ ,  $S+MeB-Ph_4$ ,  $S+MeCl-O_4$ ,  $S+EtB-F_4$ ) react with a wide range of N-, S-, Se-, O-, and C-nucleophiles to afford dihydrothiepin I ( $X = S$ ) and/or the corresponding bidentate ligands II ( $R = N_3$ ,  $NMe_2$ , morpholinyl,  $SMe$ ,  $SPh$ ,  $SePh$ ,  $OAc$ ,  $CN$ ,  $R_1 = SMe$ ;  $R = OAc$ ,  $CN$ ,  $R_1 = SEt$ ). The dual course of the reaction can be controlled by a judicious choice of the substrate counterion. In most instances, an iodide counterion aids formation of dihydrothiepins I ( $X = S$ ), whereas perchlorate, tetra-Ph borate, or tetrafluoroborate counterions favor formation of bidentate ligands II. An explanation based on a competition between the counterion and the external nucleophile is provided. Dihydrothiepinium salts I ( $X = S+MeI^-$ ,  $S+MeB-Ph_4$ ,  $S+MeCl-O_4$ ,  $S+EtB-F_4$ ) are easily accessible from dibromide ( $R,S$ )-II ( $R = R_1 = Br$ ) via dihydrothiepin ( $R,S$ )-I ( $X = S$ ). Individual enantiomers ( $R$ )- and ( $S$ )-I ( $X = S$ ) have been obtained by resolution on a preparative triacetylcellulose (TAC) column and assigned absolute configuration on the basis of CD spectra and chemical correlation.

IT 145986-80-7

RL: RCT (Reactant); RACT (Reactant or reagent)

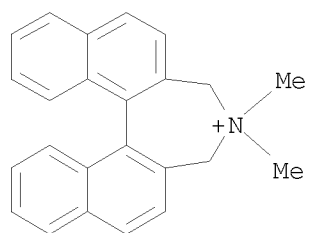
(nucleophilic substitution of, with dimethylamine in preparation of bidentate binaphthalene ligands)

RN 145986-80-7 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-dimethyl-, iodide,  
 (S)- (9CI) (CA INDEX NAME)



10/587,467



OS.CITING REF COUNT: 17 THERE ARE 17 CAPLUS RECORDS THAT CITE THIS  
RECORD (17 CITINGS)

L29 ANSWER 68 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1994:30307 CAPLUS

DOCUMENT NUMBER: 120:30307

ORIGINAL REFERENCE NO.: 120:5709a,5712a

TITLE: Asymmetric Michael reaction under PTC conditions without solvent. Importance of  $\pi$  interactions for the enantioselectivity

AUTHOR(S): Loupy, Andre; Zapparucha, Anne

CORPORATE SOURCE: Lab. React. Sel. Supports, Univ. Paris-Sud, Orsay, 91405, Fr.

SOURCE: Tetrahedron Letters (1993), 34(3), 473-6

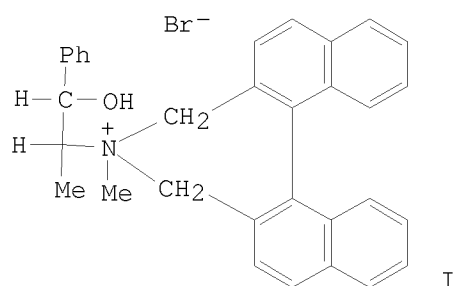
CODEN: TELEAY; ISSN: 0040-4039

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 120:30307

GI



AB Michael addition of di-Et acetylaminomalonate to chalcone under asym. phase transfer catalysis without solvent has been successfully carried out in the presence of ephedrinium salts. Substituent effects on the benzyl moiety of the ammonium part of the catalyst revealed the importance of  $\pi$ - $\pi$  attractive interactions between the catalyst and the electrophile on enantioselectivity. The best result (82% ee) was obtained with an easy accessible (S) binaphthyl compound (I).

IT 152005-68-0 152005-69-1

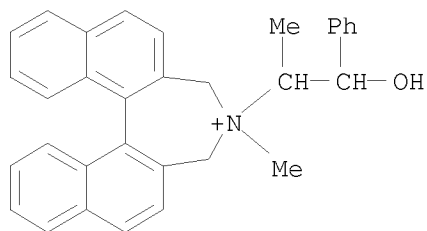
RL: CAT (Catalyst use); USES (Uses)

(catalysts, for asym. Michael addition of di-Et acetylaminomalonate to chalcone under PTC conditions without solvents)

RN 152005-68-0 CAPLUS

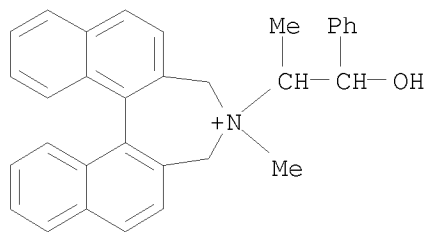
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-(2-hydroxy-1-methyl-2-phenylethyl)-4-methyl-, bromide,  
stereoisomer (9CI) (CA INDEX NAME)

10/587,467



● Br<sup>-</sup>

RN 152005-69-1 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepin-4-ium,  
4,5-dihydro-4-(2-hydroxy-1-methyl-2-phenylethyl)-4-methyl-, bromide,  
stereoisomer (9CI) (CA INDEX NAME)



● Br<sup>-</sup>

OS.CITING REF COUNT: 25 THERE ARE 25 CAPLUS RECORDS THAT CITE THIS  
RECORD (25 CITINGS)

L29 ANSWER 69 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1993:124166 CAPLUS

DOCUMENT NUMBER: 118:124166

ORIGINAL REFERENCE NO.: 118:21509a,21512a

TITLE: Optically pure (S)- and (R)-4,5-dihydro-3H-4-methyldinaphth[2,1-c;1',2'-e]azepines. Application to the synthesis of new bidentate ligands with axial asymmetry

AUTHOR(S): Stara, Irena G.; Stary, Ivo; Zavada, Jiri

CORPORATE SOURCE: Inst. Org. Chem. Biochem., Czechoslovak Acad. Sci., Prague, 166 10, Czech.

SOURCE: Tetrahedron: Asymmetry (1992), 3(11), 1365-8

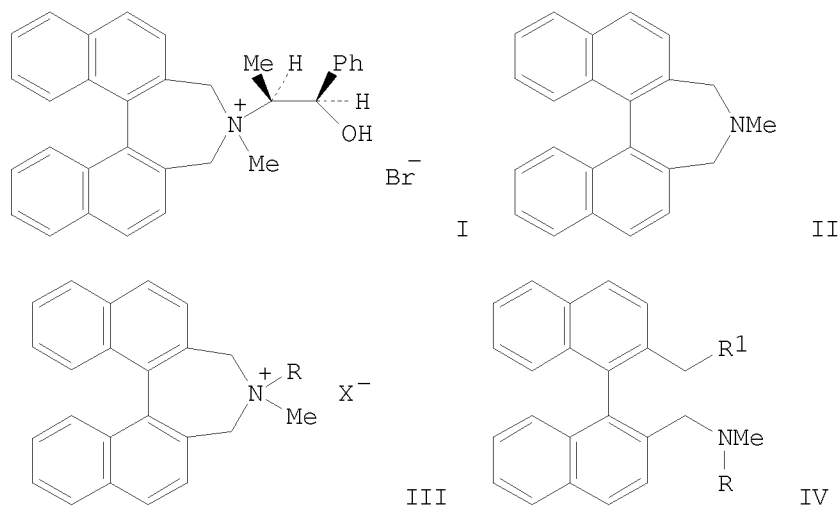
CODEN: TASYE3; ISSN: 0957-4166

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 118:124166

GI



AB Easily available ephedrinium salts (S,1R,2S)- and (R,1R,2S)-I on treatment with alkoxide base afford enantiomerically pure dihydroazepines (S)- and (R)-II, resp., in quant. yields. Cleavage of the corresponding dihydroazepinium quaternary salts (S)- and (R)-III (R = Me, X = iodo; R = n-Bu, X = Br; R = CHMe<sub>2</sub>, X = iodo) with N- and S-nucleophiles (n-BuSH, morpholine, NaN<sub>3</sub>) provides a simple approach to a new series of 1,1'-binaphthalene ligands IV (R<sub>1</sub> = S-n-Bu, 4-morpholinyl, N<sub>3</sub>) with two different donor groups in 2,2'-positions.

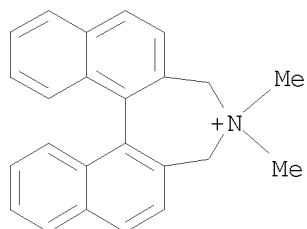
IT 145901-03-7P 145901-04-8P 145901-05-9P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and nucleophilic cleavage of)

RN 145901-03-7 CAPLUS

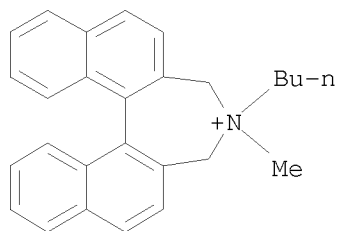
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-dimethyl-, iodide, (R)- (9CI) (CA INDEX NAME)

10/587,467



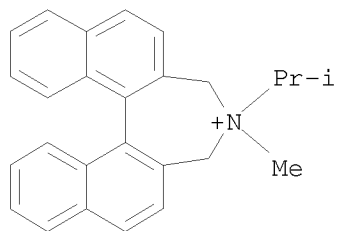
RN 145901-04-8 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4-butyl-4,5-dihydro-4-methyl-,  
bromide, stereoisomer (9CI) (CA INDEX NAME)



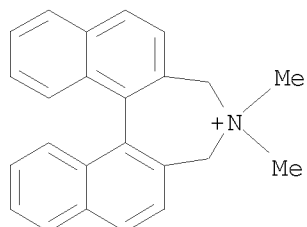
RN 145901-05-9 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-methyl-4-(1-methylethyl)-, iodide, stereoisomer (9CI) (CA  
INDEX NAME)

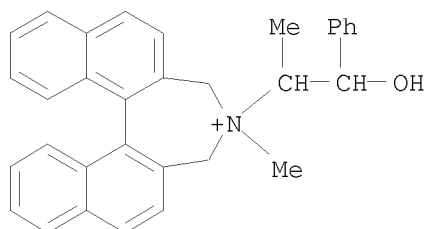


10/587,467

IT 145986-80-7P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)  
RN 145986-80-7 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-dimethyl-, iodide,  
(S)- (9CI) (CA INDEX NAME)

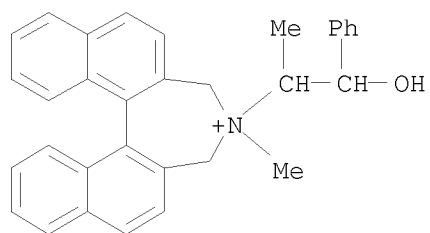


IT 86593-80-8 86631-57-4  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(rearrangement of)  
RN 86593-80-8 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)



RN 86631-57-4 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bR)- (9CI) (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT: 6

THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD  
(6 CITINGS)

L29 ANSWER 70 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1992:651230 CAPLUS

DOCUMENT NUMBER: 117:251230

ORIGINAL REFERENCE NO.: 117:43495a,43498a

TITLE: Nucleophilic cleavage of  
4,5-dihydro-3H-dinaphth[2,1-c:1',2'-e]azepinium  
quaternary salts. A convenient approach to new  
axially dissymmetric and axially asymmetric ligands

AUTHOR(S): Stara, Irena G.; Stary, Ivo; Zavada, Jiri

CORPORATE SOURCE: Inst. Org. Chem. Biochem., Czech. Acad. Sci., Prague,  
166 10, Czech.

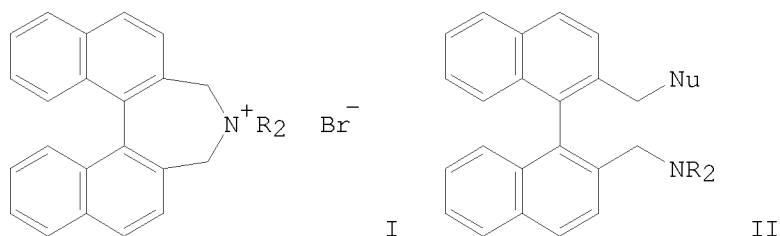
SOURCE: Journal of Organic Chemistry (1992), 57(25), 6966-9  
CODEN: JOCEAH; ISSN: 0022-3263

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 117:251230

GI



AB The title quaternary salts I (NR<sub>2</sub> = NMe<sub>2</sub>, piperidino, morpholino, piperazino) react with a wide range of uncharged as well as charged nucleophiles, e.g., amines, azide, malonate, mercaptide, phosphide and selenide ions. Significantly, the benzylic carbon in I is attacked preferentially, leading to 2,2'-bifunctional 1,1'-binaphthalenes II (Nu = morpholino, SBU, CH(CO<sub>2</sub>Et)<sub>2</sub>, N<sub>3</sub>, SePh, PPh<sub>2</sub>, piperazino) in good chemical yields. Absence of configurational scrambling has been indicated in course of the reaction. A simple access is thus provided to a new class of axially dissym. and axially asym. binaphthyl ligands containing resp. same or different donor groups in the 2,2'-positions.

IT 86593-80-8 86631-57-4

RL: RCT (Reactant); RACT (Reactant or reagent)

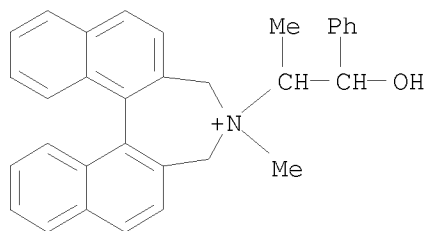
(nucleophilic ring cleavage of)

RN 86593-80-8 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)



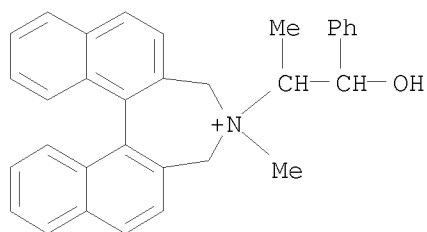
10/587,467



● Br<sup>-</sup>

RN 86631-57-4 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bR)- (9CI) (CA INDEX NAME)



● Br<sup>-</sup>

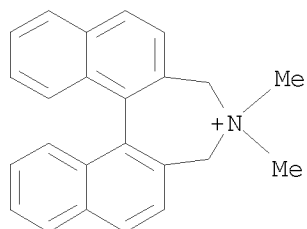
IT 97781-19-6P 143970-96-1P 143970-97-2P  
144068-75-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and nucleophilic ring cleavage of)

RN 97781-19-6 CAPLUS

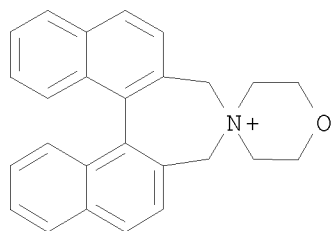
CN 7H-Dinaphth[2,1-c:1',2'-e]azepinium, 8,9-dihydro-8,8-dimethyl-, bromide  
(1:1) (CA INDEX NAME)

10/587,467



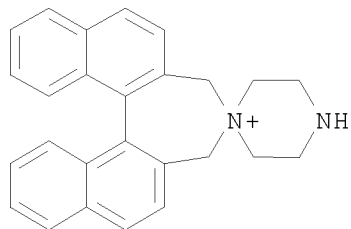
RN 143970-96-1 CAPLUS

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,4'-morpholinium], 7,9-dihydro-,  
bromide (1:1) (CA INDEX NAME)



RN 143970-97-2 CAPLUS

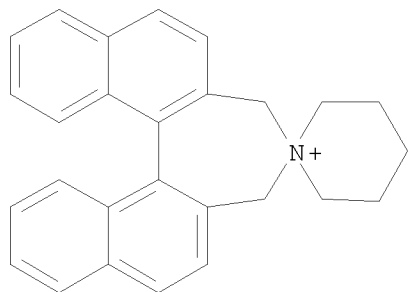
CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,1'-piperazinium], 7,9-dihydro-,  
bromide (1:1) (CA INDEX NAME)



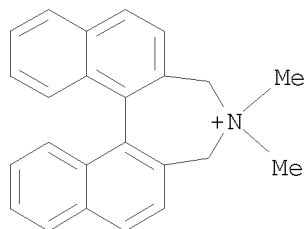
RN 144068-75-7 CAPLUS

10/587,467

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,1'-piperidinium], 7,9-dihydro-,  
bromide (1:1) (CA INDEX NAME)



IT 144068-74-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(ring cleavage of, with sodium sulfide)  
RN 144068-74-6 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-dimethyl-, bromide,  
(R)- (9CI) (CA INDEX NAME)



OS.CITING REF COUNT: 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD  
(7 CITINGS)

L29 ANSWER 71 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1985:578020 CAPLUS

DOCUMENT NUMBER: 103:178020

ORIGINAL REFERENCE NO.: 103:28635a,28638a

TITLE: New and improved synthesis of optically pure (R)- and (S)-2,2'-dimethyl-1,1'-binaphthyl and related compounds

AUTHOR(S): Maigrot, Nicole; Mazaleyrat, Jean Paul

CORPORATE SOURCE: Groupe Rech. No. 12, CNRS, Thiais, F-94320, Fr.

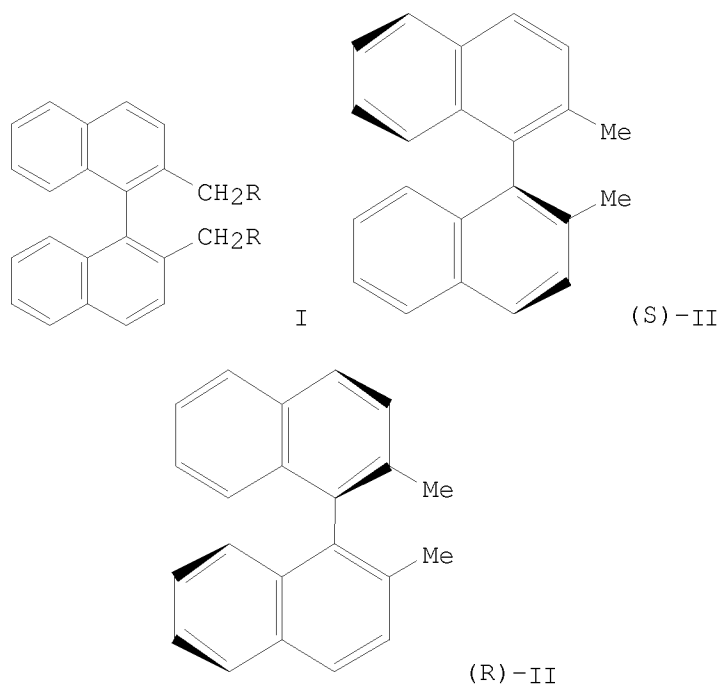
SOURCE: Synthesis (1985), (3), 317-20  
CODEN: SYNTBF; ISSN: 0039-7881

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 103:178020

GI



AB Racemic binaphthyl derivative (R,S)-I (R = H) was resolved to the title compds. (S)-II and (R)-II. (R,S)-I (R = H) was brominated to yield (R,S)-I (R = Br), the latter was treated with (-)-ephedrine, and the diastereoisomeric products were treated with LiAlH<sub>4</sub> and NiCl<sub>2</sub> to give (S)-II and (R)-II.

IT 86593-80-8P 86631-57-4P

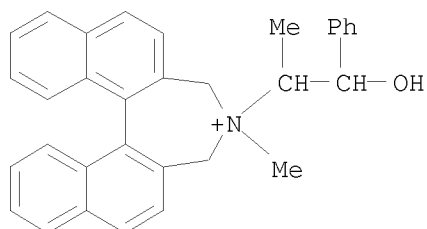
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and hydride reduction of)

RN 86593-80-8 CAPLUS

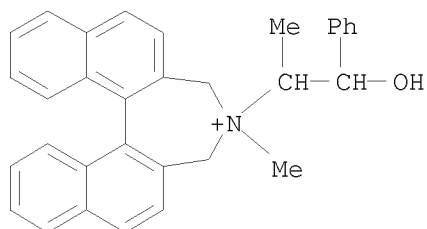
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,

10/587,467

4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)



RN 86631-57-4 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bR)- (9CI) (CA INDEX NAME)



OS.CITING REF COUNT: 47 THERE ARE 47 CAPLUS RECORDS THAT CITE THIS  
RECORD (48 CITINGS)

L29 ANSWER 72 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1985:504665 CAPLUS

DOCUMENT NUMBER: 103:104665

ORIGINAL REFERENCE NO.: 103:16753a,16756a

TITLE: Reductive cleavage of axially disymmetric tertiary amines and quaternary ammonium salts by lithium aluminum hydride. Synthesis of new 1,1'-binaphthyl substituted amines

AUTHOR(S): Cottineau, Frederic; Maigrot, Nicole; Mazaleyrat, Jean Paul

CORPORATE SOURCE: CNRS, Thiais, 94320, Fr.

SOURCE: Tetrahedron Letters (1985), 26(4), 421-4

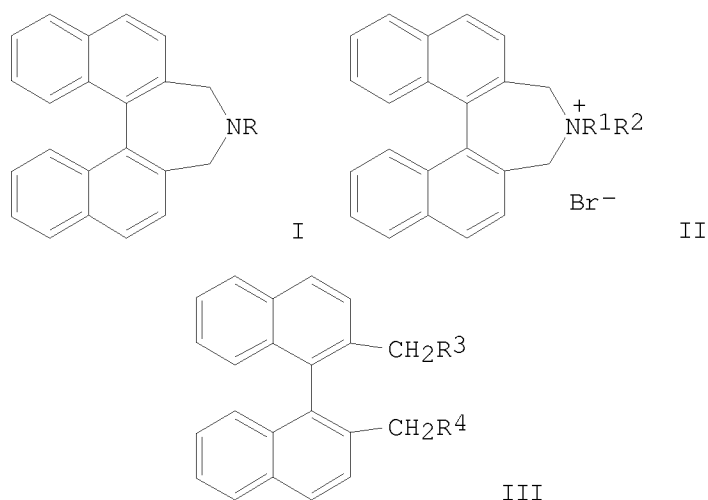
CODEN: TELEAY; ISSN: 0040-4039

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 103:104665

GI



AB Axially disym. tertiary amines I ( $R = \text{Me}, \text{CH}_2\text{CH}_2\text{NMe}_2, \text{CH}_2\text{CH}_2\text{NHAc}$ ) or quaternary ammonium salts II [ $R_1 = R_2 = \text{Me}; R_1 = \text{Me}, R_2 = (S,R)\text{-CHMeCHPhOH}; R_1R_2 = (S)\text{-(CH}_2)_3\text{CH(CH}_2\text{OH)}$ ] were synthesized by double alkylation of  $\text{RNH}_2$  or  $\text{R}_1\text{R}_2\text{NH}$  with racemic or optically pure bis(bromomethyl)binaphthyl III ( $R_3 = R_4 = \text{Br}$ ). Reductive cleavage of I and II by  $\text{LiAlH}_4$  gave chiral amines III ( $R_3 = \text{NHR}, \text{NR}_1\text{R}_2, R_4 = \text{H}$ ) in high yields and without racemization. III ( $R_3 = R_4 = \text{H}$ ) was a byproduct in all cases.

IT 86593-80-8P 86631-57-4P 97781-19-6P

97781-20-9P 97859-19-3P

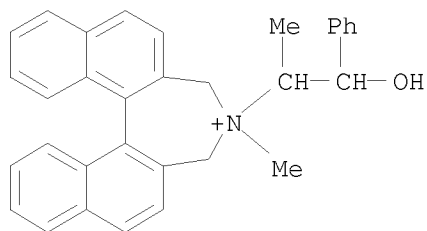
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation and reductive ring cleavage of)

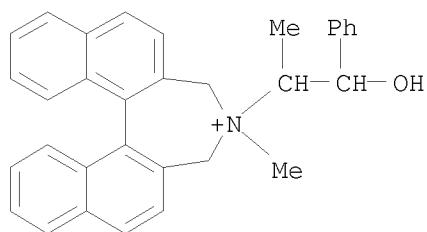
RN 86593-80-8 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)

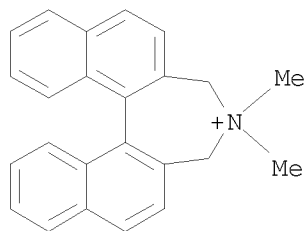
10/587,467



RN 86631-57-4 CAPLUS  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bR)- (9CI) (CA INDEX NAME)

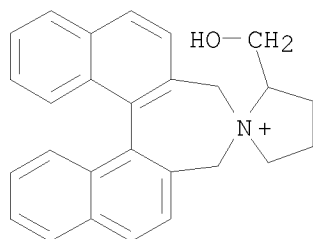


RN 97781-19-6 CAPLUS  
CN 7H-Dinaphth[2,1-c:1',2'-e]azepinium, 8,9-dihydro-8,8-dimethyl-, bromide  
(1:1) (CA INDEX NAME)

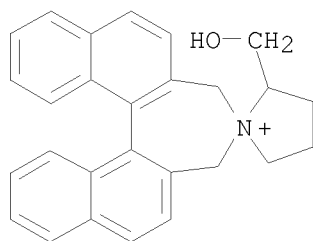


10/587,467

RN 97781-20-9 CAPLUS  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-pyrrolidinium],  
3,5-dihydro-2'-(hydroxymethyl)-, bromide, stereoisomer (9CI) (CA INDEX  
NAME)



RN 97859-19-3 CAPLUS  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-pyrrolidinium],  
3,5-dihydro-2'-(hydroxymethyl)-, bromide, stereoisomer (9CI) (CA INDEX  
NAME)



OS.CITING REF COUNT: 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD  
(7 CITINGS)



L29 ANSWER 73 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1983:470547 CAPLUS

DOCUMENT NUMBER: 99:70547

ORIGINAL REFERENCE NO.: 99:10951a,10954a

TITLE: A simple method for the synthesis of chiral transfer agents by the action of an alkylating agent on the 1,1'-binaphthyl skeleton

AUTHOR(S): Mazaleyrat, J. P.

CORPORATE SOURCE: Groupe Rech. No. 12, CNRS, Thiais, 94320, Fr.

SOURCE: Tetrahedron Letters (1983), 24(12), 1243-6

CODEN: TELEAY; ISSN: 0040-4039

DOCUMENT TYPE: Journal

LANGUAGE: French

OTHER SOURCE(S): CASREACT 99:70547

GI For diagram(s), see printed CA Issue.

AB Quaternization of (S)-(-)- and (R)-(+)-2,2'-bis(bromomethyl)-1,1'-binaphthyl with (-)-ephedrine in refluxing C<sub>6</sub>H<sub>6</sub> gave the salts I and II, resp. I and II act as phase transfer catalysts in the stereoselective reduction of ketones and the epoxidn. of (E)-PhCH:CHCOPh (III). E.g., reaction of III with H<sub>2</sub>O<sub>2</sub> and NaOH in PhMe containing I at ambient temperature

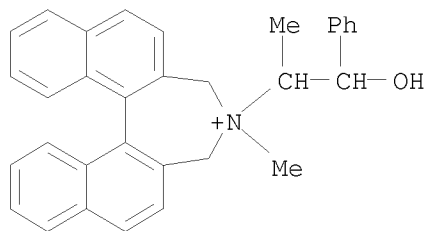
for 24 h gave epoxide (-)-IV in 69% yield and 37.1% enantiomeric excess.

IT 86593-80-8P 86631-57-4P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and phase-transfer catalysis by)

RN 86593-80-8 CAPLUS

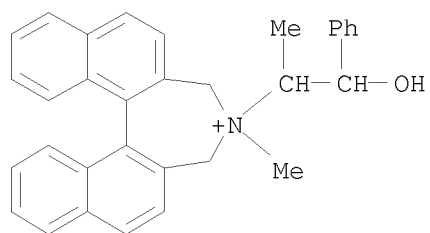
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bS)- (9CI) (CA INDEX NAME)



RN 86631-57-4 CAPLUS

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
bromide, (11bR)- (9CI) (CA INDEX NAME)

10/587,467



OS.CITING REF COUNT:        13        THERE ARE 13 CAPLUS RECORDS THAT CITE THIS  
RECORD (13 CITINGS)

L29 ANSWER 74 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1975:57401 CAPLUS

DOCUMENT NUMBER: 82:57401

ORIGINAL REFERENCE NO.: 82:9171a,9174a

TITLE: Optical activity in the biaryl series

AUTHOR(S): Mason, S. F.; Seal, R. H.; Roberts, D. R.

CORPORATE SOURCE: Chem. Dep., King's Coll., London, UK

SOURCE: Tetrahedron (1974), 30(12), 1671-82

CODEN: TETRAB; ISSN: 0040-4020

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The absolute configurations of biphenyl, binaphthyls, and bianthryls were determined from their CD spectra using either the exciton or the  $\pi$ -SCF approxns. Biaryls with  $\pi/2$  dihedral angles or 1,1-binaphthyls with angles of 100-10° could not be assigned.

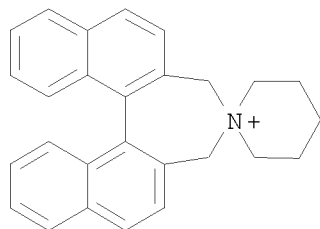
IT 54113-61-0

RL: PRP (Properties)

(absolute configuration of, CD in relation to)

RN 54113-61-0 CAPLUS

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium], 3,5-dihydro-, (11bS)- (9CI) (CA INDEX NAME)



OS.CITING REF COUNT: 109 THERE ARE 109 CAPLUS RECORDS THAT CITE THIS RECORD (110 CITINGS)

L29 ANSWER 75 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1958:55790 CAPLUS

DOCUMENT NUMBER: 52:55790

ORIGINAL REFERENCE NO.: 52:10014g-i,10015a-c

TITLE: Configurational studies in the biphenyl series. IV. Conformation and optical rotation of restricted biphenyls. Configurational correlation of biaryls by optical displacement. The absolute configuration of restricted 1,1'-binaphthyls

AUTHOR(S): Fitts, Donald D.; Siegel, Maurice; Mislow, Kurt

CORPORATE SOURCE: New York Univ., New York, NY

SOURCE: Journal of the American Chemical Society (1958), 80, 480-6

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

AB The average interplanar angle  $\theta$  of [6,2-ClMeC<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (I) has been calculated to be approx. 92° using the polarizability theory of optical activity. The difference in sign. of [6,2-Me(H<sub>2</sub>N)-C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (II) and (2,1-H<sub>2</sub>NC<sub>10</sub>H<sub>6</sub>)<sub>2</sub> (III) in aprotic and acidic solvents may be accounted for by a change in quadrant of  $\theta$ . The S-configuration was assigned to (+)-9,10-dihydro-3,4,5,6-dibenzophenanthrene (IV) and to (-)-III. A general optical displacement rule is proposed which allows absolute configurational assignments in the biaryl series on the basis of characteristic rotational shifts accompanying 2,2'-bridge formation. (+)-[6,2-HO<sub>2</sub>C(O<sub>2</sub>N)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (0.54 g.), m. 228.5-30.5°, [ $\alpha$ ]<sub>26D</sub> 127° (MeOH), 5 cc. SOCl<sub>2</sub>, and 0.2 cc. dry pyridine refluxed 0.5 h.

and evaporated, and the residue treated with 2 cc. concentrated NH<sub>4</sub>OH and filtered

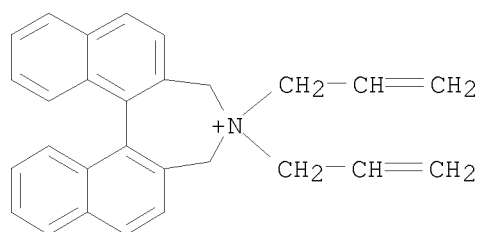
yielded (+)-[6,2-H<sub>2</sub>NO<sub>2</sub>C(O<sub>2</sub>N)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (V), m. 217.5-18.5°, [ $\alpha$ ]<sub>28D</sub> 290° (c 0.92, MeOH). (+)-[6,2-Cl(HO<sub>2</sub>C)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (0.30 g.) (VI), m. 263-5°, [ $\alpha$ ]<sub>24D</sub> 5.7° (MeOH), 5 cc. SOCl<sub>2</sub>, and 0.2 cc. dry pyridine refluxed 0.5 h., the solvent removed, and the residue recrystd. from CCl<sub>4</sub>, treated with 2 cc. concentrated NH<sub>4</sub>OH, and recrystd. from CHCl<sub>3</sub> yielded (+)-[6,2-Cl(H<sub>2</sub>NO<sub>2</sub>C)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub>, m. 2424° (CHCl<sub>3</sub>), [ $\alpha$ ]<sub>25D</sub> 119° (c 0.14, MeOH). Piperidine (0.19 g.) in C<sub>6</sub>H<sub>6</sub> added to 0.35 g. (+)-[6,2-BrCH<sub>2</sub>(O<sub>2</sub>N)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub>, m. 169-71°, [ $\alpha$ ]<sub>25D</sub> 46° (dioxane), kept overnight, treated with the min. amount of H<sub>2</sub>O to dissolve the precipitate, and basified with concentrated

aqueous KOH, and

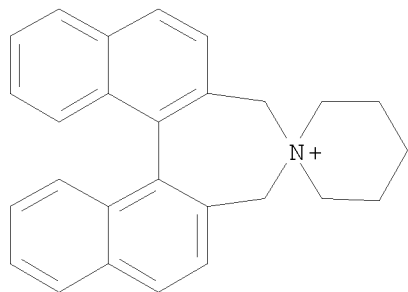
the precipitate crystallized from Me<sub>2</sub>CO yielded 0.10 g. (-)-2,7-dihydro-4',1''-dinitro-3,4,5,6-dibenzazepinium-1-spiropiperidinium bromide (VII), m. 168-9° (decomposition), [ $\alpha$ ]<sub>25546</sub> -800°, [ $\alpha$ ]<sub>25578</sub> -637°, [ $\alpha$ ]<sub>28D</sub> -527 (c 1.0, EtOH). (+)-[6,2-Cl(BrCH<sub>2</sub>)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (0.16 g.), m. 70-1°, [ $\alpha$ ]<sub>29D</sub> 77° (C<sub>6</sub>H<sub>6</sub>), and piperidine gave similarly 0.08 g. 4',1''-di-Cl analog of VII, m. 297-8.5° (decomposition) (Me<sub>2</sub>CO), [ $\alpha$ ]<sub>27546</sub> -84°, [ $\alpha$ ]<sub>27578</sub> -84°, [ $\alpha$ ]<sub>27D</sub> -83° (c 1.2, EtOH). (-)-VI, m. 261-2.5°, [ $\alpha$ ]<sub>29D</sub> -7.2° (MeOH), treated with CH<sub>2</sub>N<sub>2</sub> in Et<sub>2</sub>O gave the di-Me ester, m. 104-5.5° (EtOH), [ $\alpha$ ]<sub>27D</sub> -5.8° (c 1.0, MeOH), [ $\alpha$ ]<sub>27D</sub> -11.5° (c 1.0, EtOAc). (-)-[2,1-HO<sub>2</sub>CC<sub>10</sub>H<sub>5</sub>]<sub>2</sub>, m. about 135° (decomposition), [ $\alpha$ ]<sub>22546</sub> -123° (0.1N NaOH), gave similarly the di-Me ester, m. 154-5° (EtOH), [ $\alpha$ ]<sub>29D</sub> -18° (c 1.2, MeOH), [ $\alpha$ ]<sub>27D</sub> -27° (c 1.4, EtOAc). (-)-(2,1-BrCH<sub>2</sub>C<sub>10</sub>H<sub>6</sub>)<sub>2</sub> (0.23 g.), m. 183.5-5.5°, [ $\alpha$ ]<sub>29546</sub> -200° (c 0.90, C<sub>6</sub>H<sub>6</sub>), 0.6 g. LiAlH<sub>4</sub>, and 45 cc. Et<sub>2</sub>O refluxed 1 h. gave

(+)-(2,1-MeC10H6)2, m. 64-7° (EtOH),  $[\alpha]_{22D} 19^\circ$  (c 1.3, EtOH). The following general optical displacement rule is proposed: a sym. substituted hindered biaryl has the S-(resp. R-) configuration if, in going from an open to a bridged system, the optical activity suffers a marked shift in the pos. (resp. neg.) direction.

IT 122239-19-4P, 4,4-Diallyl-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepinium iodide 144068-75-7P,  
Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium], 3,5-dihydro-,  
bromide  
RL: PREP (Preparation)  
(preparation of)  
RN 122239-19-4 CAPLUS  
CN 7H-Dinaphth[2,1-c:1',2'-e]azepinium, 8,9-dihydro-8,8-di-2-propen-1-yl-,  
iodide (1:1) (CA INDEX NAME)



RN 144068-75-7 CAPLUS  
CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,1'-piperidinium], 7,9-dihydro-,  
bromide (1:1) (CA INDEX NAME)



OS.CITING REF COUNT: 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD  
(8 CITINGS)

L29 ANSWER 76 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1958:55789 CAPLUS

DOCUMENT NUMBER: 52:55789

ORIGINAL REFERENCE NO.: 52:10013h-i,10014a-g

TITLE: Configurational studies in the biphenyl series. III.

Direct configurational intercorrelation of

6,6'-dinitro-, 6,6'-dichloro- and

6,6'-dimethyl-2,2'-diphenic acid. Absolute

configuration of 6,6'-dimethyl-2,2'-biphenyldiamine

AUTHOR(S): McGinn, Francis A.; Lazarus, Allan K.; Siegel,

Maurice; Ricci, John E.; Mislow, Kurt

CORPORATE SOURCE: New York Univ., New York, NY

SOURCE: Journal of the American Chemical Society (1958), 80, 476-80

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

AB [2,6-BrCH<sub>2</sub>(O<sub>2</sub>N)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (I), [6,2-Cl(HOCH<sub>2</sub>)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (II), and [6,2-Me(HO<sub>2</sub>C)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (III) have each been related by chemical paths to [6,2-Me(H<sub>2</sub>N)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (IV) and therefore to each other confirming the results of the indirect method of thermal analysis and providing an absolute configurational assignment for IV which is in conflict with the theoretical considerations of Kuhn and Rometsch (C.A. 41, 1599a). (+)-[2,6-HO<sub>2</sub>C(O<sub>2</sub>N)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (0.815 g.) in 25 cc. EtOH hydrogenated 1.5 hrs. at room temperature and 50 lb. over 0.300 g. 5% Pd-C gave the inactive dilactam of [2,6-HO<sub>2</sub>C(H<sub>2</sub>N)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub>, m. above 300°, soluble in H<sub>2</sub>SO<sub>4</sub> with a strong blue fluorescence. (-)-[6,2-HOCH<sub>2</sub>(O<sub>2</sub>N)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (0.175 g.) in 25 cc. absolute EtOH hydrogenated at 26° and 1 atmospheric over 0.066 g. 5% Pd-C gave (-)-[6,2-H<sub>2</sub>N(HOCH<sub>2</sub>)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub>, m. 57-8° (MeOH-C<sub>6</sub>H<sub>6</sub>), [α]<sub>20</sub>D -135° (c 0.77, MeOH). p-O<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>OH reduced similarly and the product acetylated yielded p-AcNHC<sub>6</sub>H<sub>4</sub>Me, m. 148-50° (EtOH-ligroine). NaBH<sub>4</sub> (0.83 g.) in 21.5 cc. (MeOCH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>O (V) added to 2.17 g. (-)-I, 1.04 g. AlCl<sub>3</sub>, and 6 cc. V, stirred 1 hr. at 75°, treated with 86 cc. 6N H<sub>2</sub>SO<sub>4</sub>, kept overnight, and filtered gave (-)-[2,6-Me(O<sub>2</sub>N)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (VI), needles, m. 95-7° (hexane), [α]<sub>27</sub>D -25° (c 2.5, EtOH). (±)-I gave similarly (±)-VI, m. 108-10°. IV resolved through the tartrate salts by the method of Meisenheimer and Horing (C.A. 21, 2892) gave (+)-IV, m. 156-8°, [α]<sub>33</sub>D -35° (c 3.5, N HCl), [α]<sub>31</sub>D 48° (c 2.5, absolute EtOH), which yielded (-)-N,N'-di-Ac derivative (VII), m. 232-4°, [α]<sub>25</sub>D -126° (c 1.2, absolute EtOH); the mother liquor yielded (-)-IV, m. 156-8° (EtOH), [α]<sub>30</sub>D 34° (c 3.5, HCl), [α]<sub>26</sub>D -47° (c 3.0, absolute EtOH); (+)-VII, m. 233-5°, [α]<sub>26</sub>D 128° (c 1.0, absolute EtOH). The specific rotations of (+)-IV were determined in a variety of solvents (solvent, concentration, and [α]<sub>24</sub>D given): hexane, 0.21, 126°; dioxane, 1.66, 116°; pyridine, 1.19, 111°; C<sub>6</sub>H<sub>6</sub>, 1.86, 101°; Me<sub>2</sub>CO, 1.41, 100°; PhI, 0.68, 86°; MeCN, 1.64, 85°; EtOH, 1.52, 49°; MeOH, 1.91, 42°; H<sub>2</sub>SO<sub>4</sub>, 1.82, -25°; N aqueous HCl, 1.60, -36°; AcOH, 1.63, -60°. The optical sign of IV is solvent-dependent. The monoprotonated form in 50% dioxane has a sign opposite to that of the unprotonated IV in the same medium. Approx. values are calculated for the ionization consts. and for the specific rotations of the unprotonated and the monoprotonated species. (-)-VI (0.122 g.) and 0.024 g. 5% Pd-C in 25 cc. absolute EtOH hydrogenated at 26° and 1 atmospheric yielded (-)-IV, m. 153-8°, [α]<sub>26</sub>D

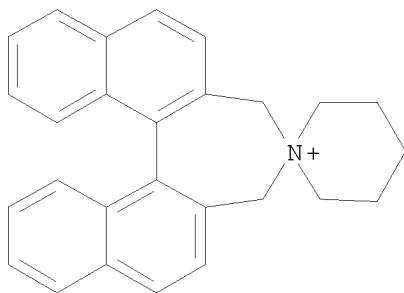
-49° (c 2.9, EtOH); (-)-IV gave with Ac<sub>2</sub>O (+)-VII, m. 232-3°. (±)-VI gave similarly (±)-IV, m. 207-9.5°. (+)-II (2.9 g.) and 140 cc. 48% HBr refluxed 1 hr. gave 4.1 g. (+)-[6,2-Cl(BrCH<sub>2</sub>)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (VIII), m. 70-1°, [α]<sub>29D</sub> 77° (c 0.93, C<sub>6</sub>H<sub>6</sub>). (+)-VIII (2.0 g.), 0.75 g. NaBH<sub>4</sub>, and 0.96 g. AlCl<sub>3</sub> in 25 cc. V heated 1 hr. at 75° and decomposed with 75 cc. 6N H<sub>2</sub>SO<sub>4</sub>, and the resulting oil hydrogenated in 20 cc. MeOH over 0.20 g. 5% Pd-C at 50 lb. gave 1.2 g. (crude) (+)-[6,2-ClMeC<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (IX), m. 110-11° (aqueous EtOH), [α]<sub>27D</sub> 33° (c 2.8, absolute EtOH), 45° (c 1.0, hexane). Aqueous NaNO<sub>2</sub> (3.5 g./10 cc.) added at -5° to 5.3 g. (-)-IV, m. 156-8°, [α]<sub>31D</sub> -47° (c 3.0, absolute EtOH), in 22 cc. 28% HCl treated at -5° with 22 cc. 28% HCl containing 7.5 g. CuCl, heated 5 min. at 60°, and extracted with Et<sub>2</sub>O, and the residue from the extract steam distilled yielded 1.4 g. (-)-IX, m. 109-11° (95% EtOH), [α]<sub>27D</sub> -30° (c 4.6, absolute EtOH). [2,6,4-ClMe(H<sub>2</sub>N)C<sub>6</sub>H<sub>2</sub>]<sub>2</sub>, diazotized and reduced with 50% H<sub>3</sub>PO<sub>2</sub> gave (±)-IX, m. 117-18°, which was also obtained from (±)-IV. (+)-IV (5.0 g.), [α]<sub>31D</sub> 48° (EtOH), in 10 cc. concentrated HCl and 48 cc. H<sub>2</sub>O diazotized with 3.4 g. NaNO<sub>2</sub> in 10 cc. H<sub>2</sub>O at 0-5° and added to aqueous NaCN (7.8 g./12 cc.) and 12 cc. slurry of CuCl at 0-5°, the precipitate extracted with PhMe, the extract evaporated, and the residue steam distilled gave 0.40 g. (crude) [2,6-Me(NC)C<sub>6</sub>H<sub>3</sub>]<sub>2</sub> (X), m. 157-7.5° (C<sub>6</sub>H<sub>6</sub>-hexane), [α]<sub>28D</sub> 20° (c 1.9, tetrahydrofuran). (+)-III (2.1 g.), 6.5 g. PCl<sub>5</sub>, and 2.8 g. p-MeC<sub>6</sub>H<sub>4</sub>SO<sub>2</sub>NH<sub>2</sub> heated at 200-5° with distillation and the residue treated with 6 cc. pyridine and then 28 cc. H<sub>2</sub>O gave 0.70 g. (-)-X, m. 157-7.5° (C<sub>6</sub>H<sub>6</sub>-ligroine), [α]<sub>28D</sub> -18° (c 5.6, tetrahydrofuran).

IT 144068-75-7

(Derived from data in the 6th Collective Formula Index (1957-1961))

RN 144068-75-7 CAPLUS

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,1'-piperidinium], 7,9-dihydro-, bromide (1:1) (CA INDEX NAME)



● Br<sup>-</sup>

OS.CITING REF COUNT: 9

THERE ARE 9 CAPLUS RECORDS THAT CITE THIS RECORD  
(9 CITINGS)

L29 ANSWER 77 OF 77 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1956:16448 CAPLUS  
 DOCUMENT NUMBER: 50:16448  
 ORIGINAL REFERENCE NO.: 50:3470i,3471a-i,3472a-b  
 TITLE: 9,10-Dihydrophenanthrenes. III. Optically active  
 9,10-dihydro-3,4-5,6-dibenzophenanthrene  
 AUTHOR(S): Hall, D. Muriel; Turner, E. E.; Hamlett, K. E.  
 CORPORATE SOURCE: Univ. London  
 SOURCE: Journal of the Chemical Society (1955) 1242-51  
 CODEN: JCSOA9; ISSN: 0368-1769  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Unavailable

AB cf. C.A. 46, 9087c. The (+)- and the (-)-form of  
 9,10-dihydro-3,4,5,6-dibenzophenanthrene (I) were prepared from the (-)- and  
 the (+)-forms of 1,1'-dinaphthyl-2,2'-dicarboxylic acid (II), via  
 2,2'-bishydroxymethyl-1,1'-binaphthyl (III), and  
 2,2'-bisbromomethyl-1,1'-binaphthyl (IV). I was optically stable in C<sub>6</sub>H<sub>6</sub>  
 at 60° but racemized in refluxing PhMe with a half-life of 218 min.  
 and in refluxing PhEt with a half-life of 13 min. Optically active  
 azepinium salts were prepared from the active IV. The optical stabilities  
 of 2,2'-bridged binaphthyls and biphenyls were discussed.  
 1-Bromo-2-methylnaphthalene was brominated with N-bromosuccinimide to give  
 1-bromo-2-bromomethylnaphthalene (V). V (48 g.) in Et<sub>2</sub>O was treated with  
 PhLi (from 1.5 g. Li and 16 g. PhBr) to yield 21 g.  
 1,2-di(1-bromo-2-naphthyl)ethane (VI) plates, m. 192.5-3.5° (from  
 C<sub>6</sub>H<sub>6</sub>). VI heated 1 hr. at 270-90° with Cu bronze gave only  
 unchanged VI. When the reaction was carried out at 310-20° the  
 product was a gum. VI did not react with Mg in refluxing Bu<sub>2</sub>O. VI (1.65  
 g.) in Bu<sub>2</sub>O was refluxed 5 hrs. with 1 g. Na to yield 0.5 g.  
 1,2-di-2-naphthylethane, m. 185°; picrate, m. 198-9°. V (90  
 g.) in CHCl<sub>3</sub> was treated in the hot with 46.5 g. hexamine, the resulting  
 hexaminium salt (128 g.) was refluxed 1 hr. in 50% HOAc, and 105 cc.  
 concentrated HCl added and refluxed an addnl. 5 min. yielding 41 g.  
 1-bromo-2-naphthaldehyde (VII), m. 119-20°; semicarbazone, m. above  
 270°. VII (11 g.) in Me<sub>2</sub>CO was treated at 60-80° during 0.5  
 hr. with 14 g. KMnO<sub>4</sub> in H<sub>2</sub>O, then SO<sub>2</sub> passed in to yield 87%  
 1-bromo-2-naphtholic acid (VIII), m. 189-91° (purified through the  
 NH<sub>4</sub> salt). VIII gave 89% yield of Me ester and the ester heated 20 min.  
 at 270-80° with Cu bronze yielded 78% dimethyl  
 1,1'-binaphthyl-2,2'-dicarboxylate (IX), m. 158°. IX upon  
 hydrolysis yielded II, m. 272-4°. IX (20 g.) was reduced in Et<sub>2</sub>O  
 with LiAlH<sub>4</sub> to yield 16 g. III, m. 191.0-2.5°. III (10 g.) in HOAc  
 was refluxed with HBr (d. 1.49) to yield 12 g. IV, m. 151-3°. IV  
 (25 g.) in Et<sub>2</sub>O was heated 1 hr. with PhLi to yield 9.5 g. I, needles, m.  
 215-16°. Desolvated II (46.8 g.) and 44.3 g. quinine (X) were kept  
 at 4° in EtOH-Et<sub>2</sub>O and evaporated to yield 27.5 g. of the less soluble  
 salt, m. 178° (decomposition), [α]<sub>D</sub><sup>25</sup> -103.5°,  
 [α]<sub>D</sub><sup>25</sup> -89.8° (c 1.101, Me<sub>2</sub>CO) and 13.4 g. of the more  
 soluble salt, m. 184-90° (decomposition), [α]<sub>D</sub><sup>25</sup> 11.6°,  
 [α]<sub>D</sub><sup>25</sup> 8.6° (c 0.989, Me<sub>2</sub>CO). The less soluble salt (3.5 g.)  
 in CHCl<sub>3</sub> was treated with N KOH to give 1.6 g. of II, [(-) = form] m.  
 about 120° (decomposition) (from aqueous MeOH), [α]<sub>D</sub><sup>25</sup> -125.2°, [α]<sub>D</sub><sup>25</sup> -108.6° (c 1.023, 0.1N NaOH), as a  
 hydrate. Similar decomposition of the more soluble salt gave the II(+), m.  
 about 120° (decomposition), [α]<sub>D</sub><sup>25</sup> 124.2°, [α]<sub>D</sub><sup>25</sup> 107.2° (c 1.115, 0.1N NaOH). II (+) refluxed 10 hrs. in 0.1N NaOH



then 5 hrs. at 140° (sealed tube) was not racemized. II (+) was not racemized by heating 8 hrs. in HCONHMe at 175°. II (+) in 1% Tetralin was not racemized by refluxing 2 hrs. or when refluxed 6 hrs. in (CH<sub>2</sub>OH)<sub>2</sub>. II (-) (12 g.) in Et<sub>2</sub>O was refluxed 1.5 hrs. with 5.1 g. LiAlH<sub>4</sub> to give 9.1 g. III (-) as hexagonal plates, m. 168-9° (from C<sub>6</sub>H<sub>6</sub>), solvated rods, but solvent was given off at 100°, and m. 168-9°, [α]<sub>D</sub><sup>25</sup> 546123 -83.0°, [α]<sub>D</sub><sup>25</sup> 579123 -72.3° (c 0.9815, Me<sub>2</sub>CO). III (-) did not racemize when melted. Similar reduction of 5.8 g. II (+) gave 4.5 g. III (+), m. 167-8°, [α]<sub>D</sub><sup>25</sup> 546121 83.1°, [α]<sub>D</sub><sup>25</sup> 579121 72.2° (c 1.1495, Me<sub>2</sub>CO). III (-) (7.85 g.) in refluxing HOAc was treated with HBr (d. 1.49), then refluxed 7 min. with more HBr to yield 10.8 g. crude IV (-), m. 184-6°, when purified, m. 185.5-6.5°, [α]<sub>D</sub><sup>25</sup> 545123 -199.1, [α]<sub>D</sub><sup>25</sup> 579123 -169.4° (c 1.095, C<sub>6</sub>H<sub>6</sub>). Similar treatment of 3.7 g. III (+) gave IV (+), m. 185.5-6.5° (from EtCOMe), [α]<sub>D</sub><sup>25</sup> 546123 198.8°, [α]<sub>D</sub><sup>25</sup> 579123 169.9° (c 1.089, C<sub>6</sub>H<sub>6</sub>). IV (-) (4 g.) was heated 35 min. with PhLi in Et<sub>2</sub>O to yield I (+), [α]<sub>D</sub><sup>25</sup> 546122 1496°, [α]<sub>D</sub><sup>25</sup> 579122 1302° (c 0.5285, C<sub>6</sub>H<sub>6</sub>) as thick hexagonal plates, m. 183°, resolidified, and m. 215-16°. IV (+) similarly yielded I (-), m. 183° and 215-16°, [α]<sub>D</sub><sup>25</sup> 546122 -1500°, [α]<sub>D</sub><sup>25</sup> 579122 -1307° (c 0.525, C<sub>6</sub>H<sub>6</sub>). I (+) was not racemized when heated 24 hrs. at 60° in C<sub>6</sub>H<sub>6</sub>, or 35 min. at 100° in C<sub>6</sub>H<sub>6</sub> and a sealed tube, but was racemized in refluxing PhMe or PhEt. In PhMe, k was 3.18 + 10<sup>-3</sup> min.<sup>-1</sup>; half-life, 218 min; in PhEt, k was, 5.3 + 10<sup>-2</sup> min.<sup>-1</sup>; half-life 13 min. These values gave the activation energy as 34 kcal./mole. Piperidine (1.9 g.) in C<sub>6</sub>H<sub>6</sub> was kept 0.5 hr. in warm C<sub>6</sub>H<sub>6</sub> with 4.4 g. IV to yield 3.75 g. 2,7-dihydrodinaphtho(2',1',3,4)(1'',2'',5,6) azepinium-1-spiro-1'''-piperidinium bromide (XI) (±), needles, m. 250°; picrate, m. 276-7° (from Me<sub>2</sub>CO or EtOH). IV(-) (1.1 g.) similarly gave XI (+), hexagonal plates, m. 237°, [α]<sub>D</sub><sup>25</sup> 546120 306.5°, [α]<sub>D</sub><sup>25</sup> 579120 268.8° (c 1.088, EtOH); picrate as plates, m. 222°. XI (+) was more soluble in H<sub>2</sub>O than the racemic compound XI (+) in (CH<sub>2</sub>OH)<sub>2</sub> was heated rapidly to 172°, and samples withdrawn at regular intervals while the temperature was maintained at 172°. The results indicated k .apprx. 4.5 + 10<sup>-4</sup> min.<sup>-1</sup>, and a half-life 26 hrs. The solution yielded XI (+) picrate and the racemic picrate. IV (±) and diallylamine (XII) were similarly treated to give 1,1-diallyl-2,7-dihydrodinaphtho(2',1',3,4)(1'',2'',5,6) azepinium bromide (XIII) (±) as needles, m. 135° (decomposition). Recrystn. from H<sub>2</sub>O resulted in a gel. IV (-) and XII similarly treated gave XIII (+) as a gel which when treated with aqueous KI gave the iodide as plates, m. 115° (decomposition) (from aqueous EtOH), [α]<sub>D</sub><sup>25</sup> 546120 205.3°, [α]<sub>D</sub><sup>25</sup> 579120 182.2° (c 1.062, EtOH).

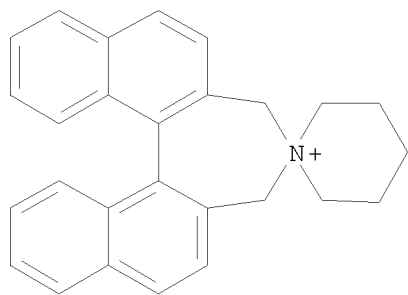
IT 144068-75-7P

RL: SPN (Synthetic preparation); PRP (Properties); PREP (Preparation)  
 (9,10-Dihydrophenanthrenes. III. Optically active  
 9,10-dihydro-3,4-5,6-dibenzophenanthrene)

RN 144068-75-7 CAPLUS

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,1'-piperidinium], 7,9-dihydro-,  
 bromide (1:1) (CA INDEX NAME)

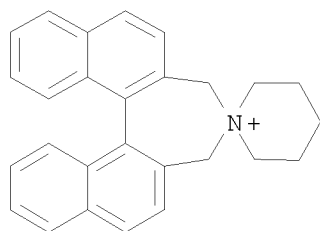
10/587,467



IT 746575-82-6, Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-  
piperidinium], 3,5-dihydro-  
(derivs.)

RN 746575-82-6 CAPLUS

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,1'-piperidinium], 7,9-dihydro-  
(CA INDEX NAME)



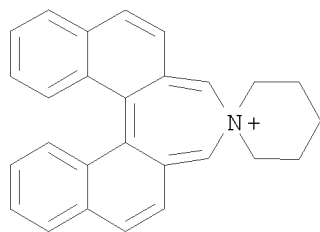
OS.CITING REF COUNT: 37 THERE ARE 37 CAPLUS RECORDS THAT CITE THIS  
RECORD (37 CITINGS)

10/587,467

=> => d 111 260

10/587,467

L11 ANSWER 260 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 191-93-5 REGISTRY  
ED Entered STN: 16 Nov 1984  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium] (8CI, 9CI) (CA  
INDEX NAME)  
MF C27 H24 N  
CI RPS

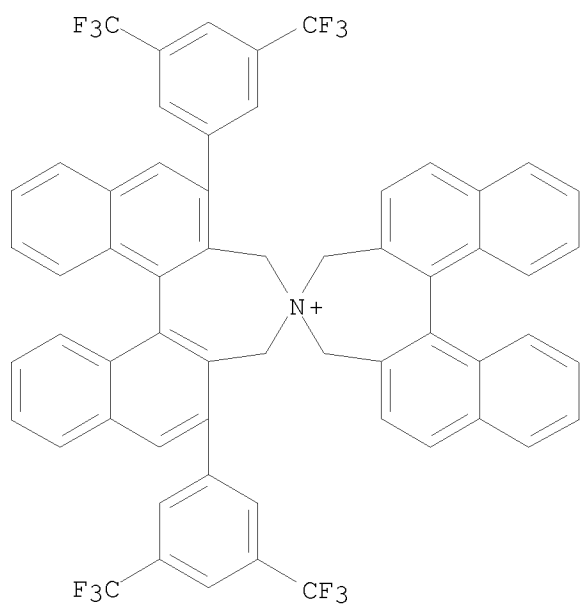


10/587,467

=> d 111 255-259

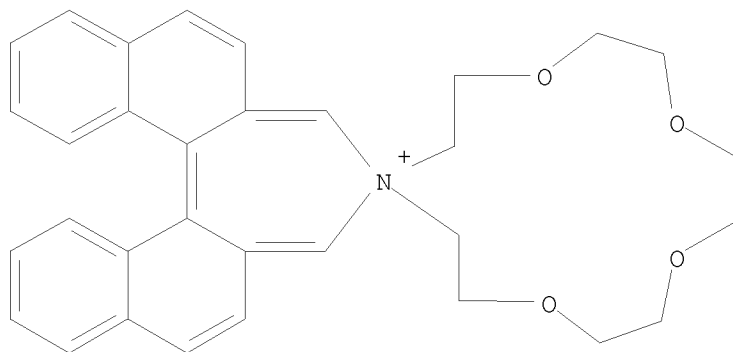
10/587,467

L11 ANSWER 255 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 344550-35-2 REGISTRY  
ED Entered STN: 05 Jul 2001  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bS,11'bS)- (9CI) (CA INDEX NAME)  
MF C60 H36 F12 N  
CI COM  
SR CA



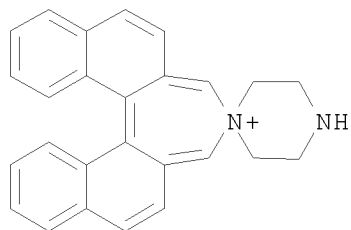
10/587,467

L11 ANSWER 256 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 223134-67-6 REGISTRY  
ED Entered STN: 14 May 1999  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepinium-4,13'-  
[1,4,7,10]tetraoxa[13]azoniacyclopentadecane] (9CI) (CA INDEX NAME)  
MF C32 H34 N O4  
CI RPS  
SR CA Index Guide or Ring Systems Handbook



10/587,467

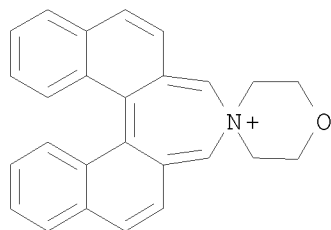
```
L11  ANSWER 257 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN   144853-25-8  REGISTRY
ED   Entered STN:   11 Dec 1992
CN   Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperazinium] (9CI)  (CA
      INDEX NAME)
MF   C26 H23 N2
CI   RPS
SR   CA Index Guide or Ring Systems Handbook
```





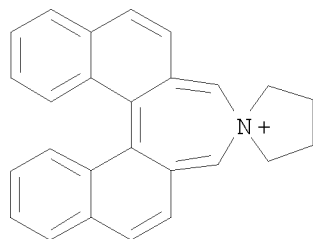
10/587,467

L11 ANSWER 258 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 144853-24-7 REGISTRY  
ED Entered STN: 11 Dec 1992  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,4'-morpholinium] (9CI) (CA  
INDEX NAME)  
MF C26 H22 N O  
CI RPS  
SR CA Index Guide or Ring Systems Handbook



10/587,467

```
L11  ANSWER 259 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN   98281-31-3  REGISTRY
ED   Entered STN:  29 Sep 1985
CN   Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-pyrrolidinium] (9CI)  (CA
      INDEX NAME)
MF   C26 H22 N
CI   RPS
SR   CA Index Guide or Ring Systems Handbook
```

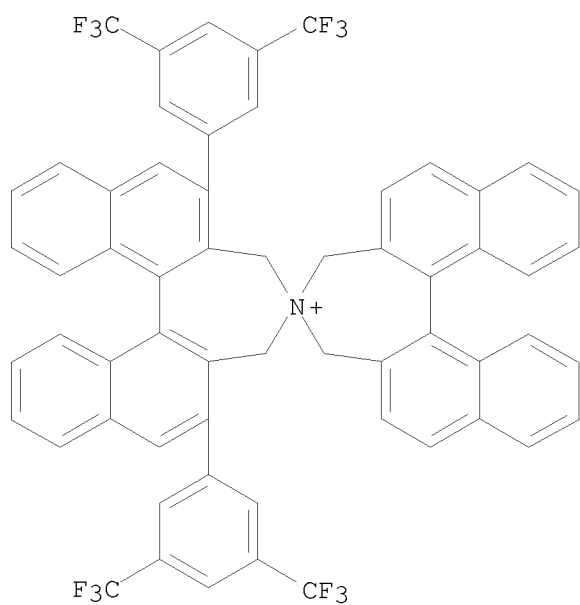


10/587,467

=> d 111 250-254

10/587,467

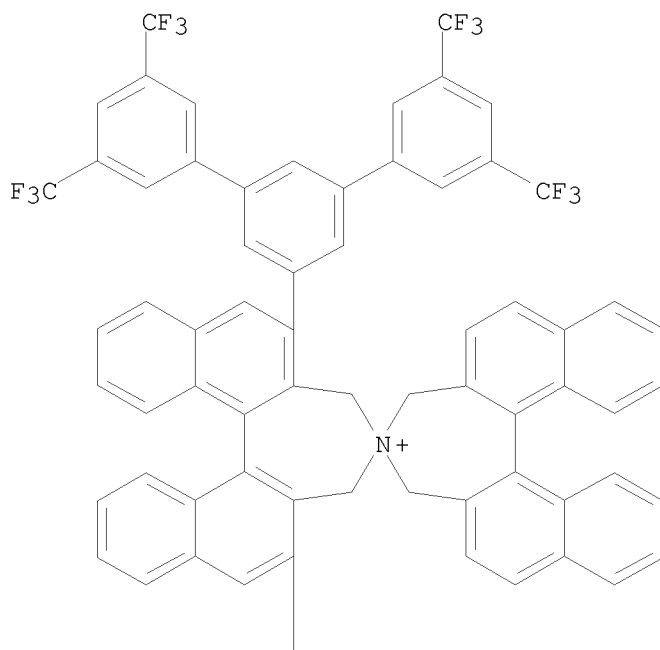
L11 ANSWER 250 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 586344-88-9 REGISTRY  
ED Entered STN: 16 Sep 2003  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C60 H36 F12 N  
CI COM  
SR CA



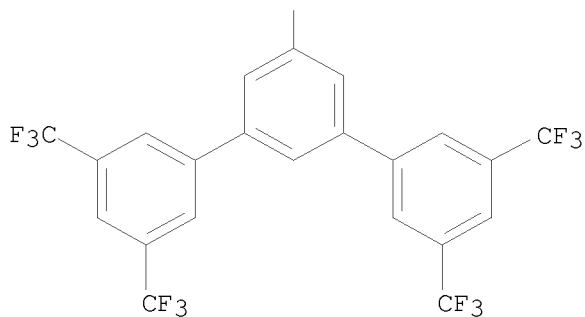
10/587,467

L11 ANSWER 251 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 586344-85-6 REGISTRY  
ED Entered STN: 16 Sep 2003  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bR,11'bR)-  
(9CI) (CA INDEX NAME)  
MF C88 H48 F24 N  
CI COM  
SR CA

PAGE 1-A

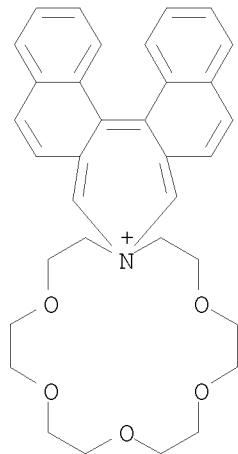


PAGE 2-A



10/587,467

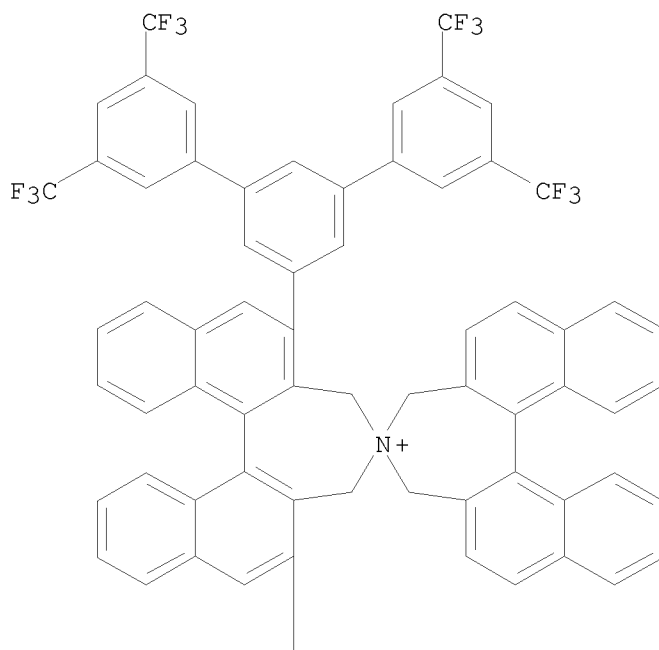
L11 ANSWER 252 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 540492-21-5 REGISTRY  
ED Entered STN: 01 Jul 2003  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepinium-4,16'-  
[1,4,7,10,13]penta[16]azoniacyclooctadecane] (9CI) (CA INDEX NAME)  
MF C34 H38 N O5  
CI RPS  
SR CA Index Guide or Ring Systems Handbook



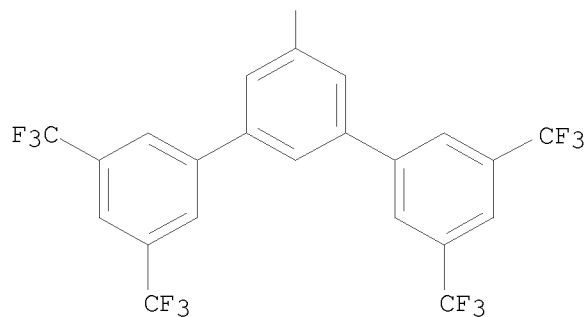
10/587,467

L11 ANSWER 253 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 503538-64-5 REGISTRY  
ED Entered STN: 21 Apr 2003  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bS,11'bS)-  
(9CI) (CA INDEX NAME)  
MF C88 H48 F24 N  
CI COM  
SR CA

PAGE 1-A



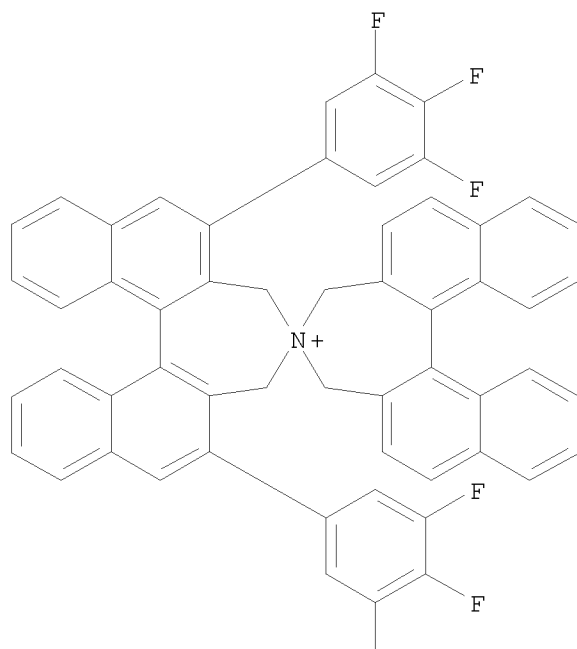
PAGE 2-A



10/587,467

L11 ANSWER 254 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 401846-45-5 REGISTRY  
ED Entered STN: 19 Mar 2002  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis(3,4,5-trifluorophenyl)-, stereoisomer (9CI)  
(CA INDEX NAME)  
MF C56 H34 F6 N  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A

F

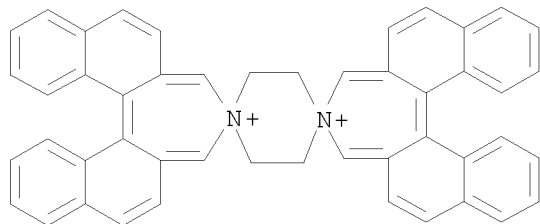


10/587,467

=> d 111 245-249

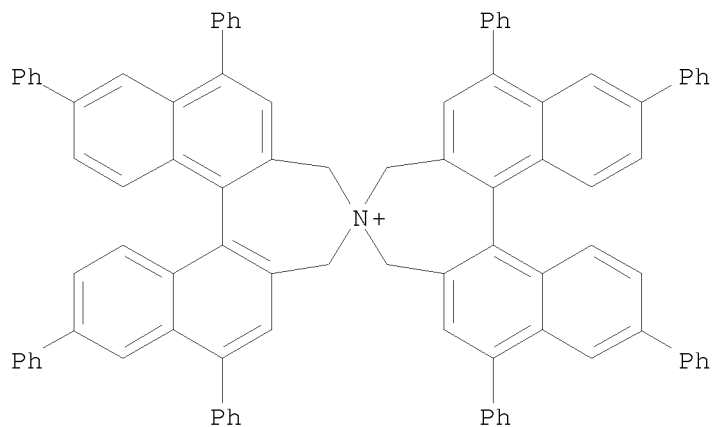
10/587,467

L11 ANSWER 245 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 709046-62-8 REGISTRY  
ED Entered STN: 14 Jul 2004  
CN Dispiro[4H-dinaphth[2,1-c:1',2'-e]azepinium-4,1'-piperazine-4',4''-  
[4H]dinaphth[2,1-c:1',2'-e]azepinium] (9CI) (CA INDEX NAME)  
MF C48 H36 N2  
CI RPS  
SR CA Index Guide or Ring Systems Handbook



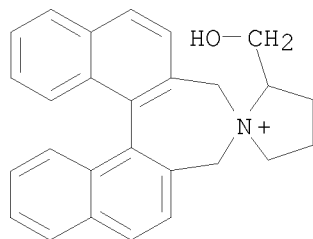
10/587,467

L11 ANSWER 246 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 695815-12-4 REGISTRY  
ED Entered STN: 18 Jun 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octaphenyl-, (11bS,11'bS)-  
(9CI) (CA INDEX NAME)  
MF C92 H64 N  
CI COM  
SR CA



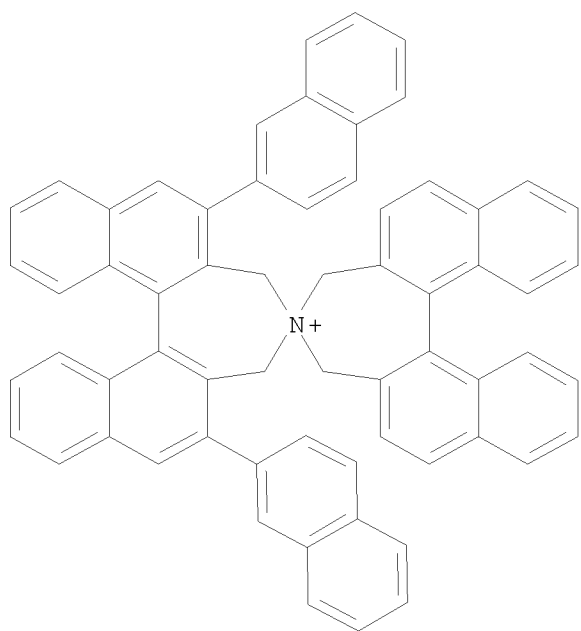
10/587,467

L11 ANSWER 247 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 691842-37-2 REGISTRY  
ED Entered STN: 11 Jun 2004  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-pyrrolidinium],  
3,5-dihydro-2'-(hydroxymethyl)-, (2'S,11bR)- (9CI) (CA INDEX NAME)  
MF C27 H26 N O  
CI COM  
SR CA



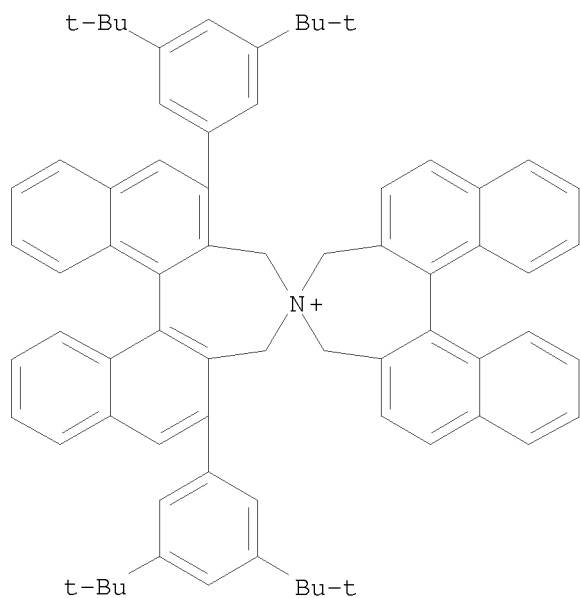
10/587,467

```
L11 ANSWER 248 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN 690954-63-3  REGISTRY
ED Entered STN: 08 Jun 2004
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],
3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, (11bR,11'bR)- (9CI) (CA
INDEX NAME)
MF C64 H44 N
CI COM
SR CA
```



10/587,467

L11 ANSWER 249 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 586344-90-3 REGISTRY  
ED Entered STN: 16 Sep 2003  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C72 H72 N  
CI COM  
SR CA



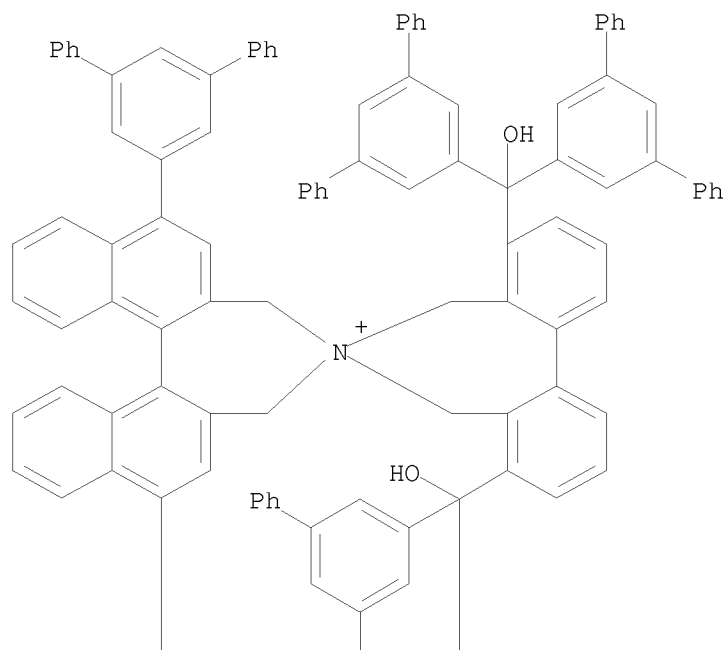
10/587,467

=> d 111 240-244

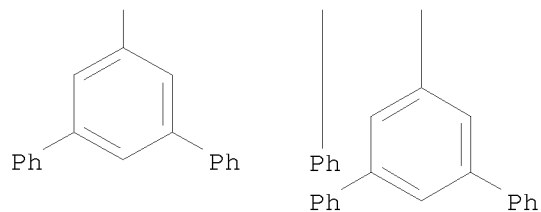
10/587,467

L11 ANSWER 240 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 727713-20-4 REGISTRY  
ED Entered STN: 17 Aug 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-4,8-bis[hydroxybis([1,1':3',1''-terphenyl]-5'-  
yl)methyl]-1',7'-bis([1,1':3',1''-terphenyl]-5'-yl)-, (11aR,11'bS)- (9CI)  
(CA INDEX NAME)  
MF C146 H104 N O2  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A

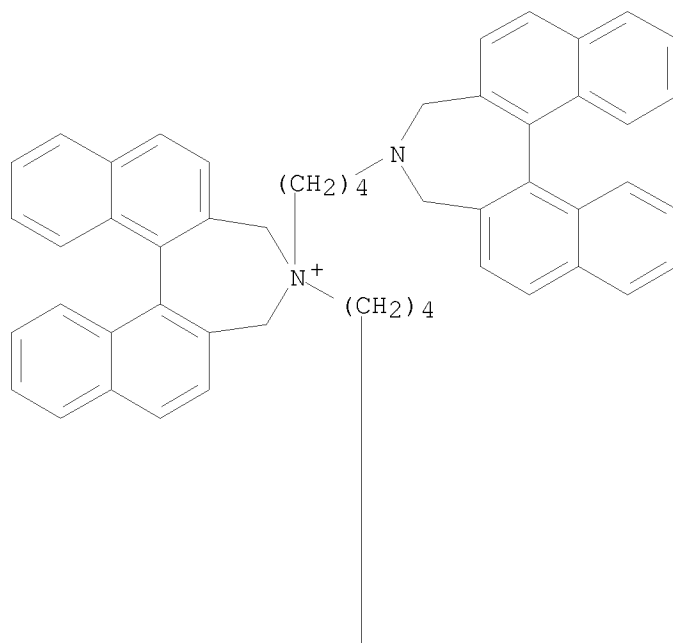




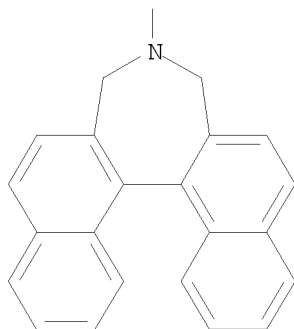
10/587,467

L11 ANSWER 241 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 727651-12-9 REGISTRY  
ED Entered STN: 16 Aug 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-bis[4-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]butyl]-  
4,5-dihydro-, (11bS)- (9CI) (CA INDEX NAME)  
MF C74 H64 N3  
CI COM  
SR CA

PAGE 1-A

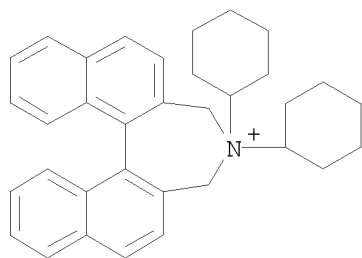


PAGE 2-A



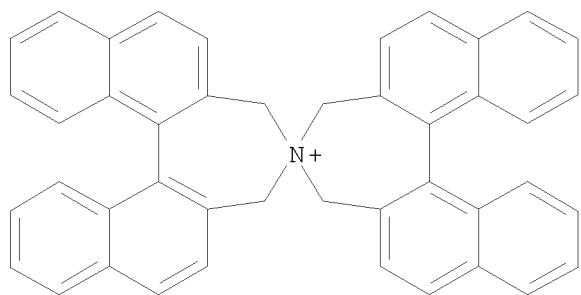
10/587,467

```
L11  ANSWER 242 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN    713488-59-6  REGISTRY
ED    Entered STN:   20 Jul 2004
CN    7H-Dinaphth[2,1-c:1',2'-e]azepinium, 8,8-dicyclohexyl-8,9-dihydro-  (CA
      INDEX NAME)
OTHER CA INDEX NAMES:
CN    3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,4-dicyclohexyl-4,5-dihydro- (9CI)
MF    C34 H38 N
CI    COM
SR    CA
```



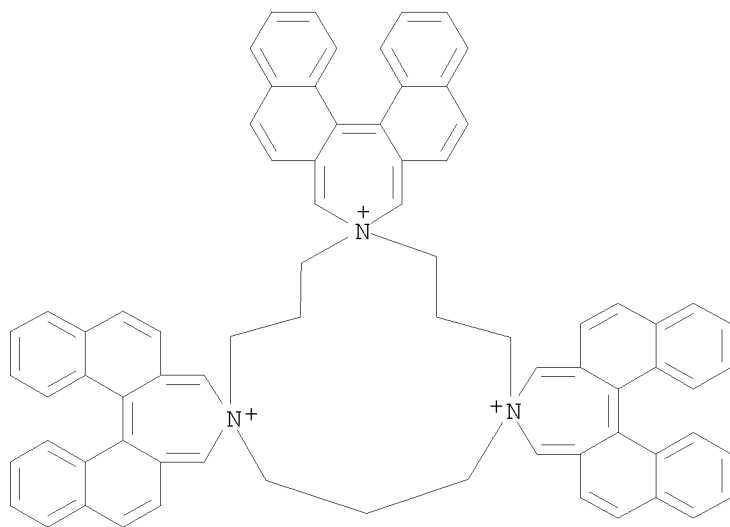
10/587,467

```
L11  ANSWER 243 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN   713487-23-1  REGISTRY
ED   Entered STN:   20 Jul 2004
CN   4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium], 3,3',5,5'-tetrahydro-,
      (11bS,11'bS)- (9CI)  (CA INDEX NAME)
MF   C44 H32 N
CI   COM
SR   CA
```



10/587,467

```
L11 ANSWER 244 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN 709046-63-9  REGISTRY
ED Entered STN: 14 Jul 2004
CN Trispiro[1,5,9-triazoniacyclododecane-1,4':5,4'':9,4'''-
   tris[4H]dinaphth[2,1-c:1',2'-e]azepinium] (9CI) (CA INDEX NAME)
MF C75 H60 N3
CI RPS
SR CA Index Guide or Ring Systems Handbook
```

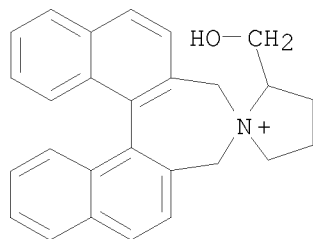


10/587,467

=> d 111 235-239

10/587,467

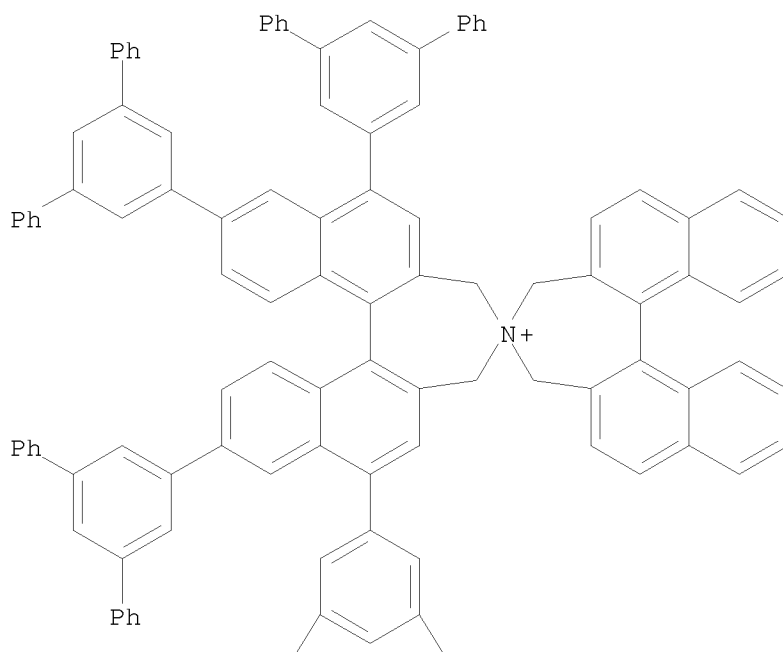
L11 ANSWER 235 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 737717-51-0 REGISTRY  
ED Entered STN: 02 Sep 2004  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-pyrrolidinium],  
3,5-dihydro-2'-(hydroxymethyl)-, stereoisomer (9CI) (CA INDEX NAME)  
MF C27 H26 N O  
CI COM  
SR CA



10/587,467

L11 ANSWER 236 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 736925-01-2 REGISTRY  
ED Entered STN: 01 Sep 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,7,9,14-tetrakis([1,1':3',1''-terphenyl]-5'-yl)-,  
(11bS,11'bS)- (9CI) (CA INDEX NAME)  
MF C116 H80 N  
CI COM  
SR CA

PAGE 1-A

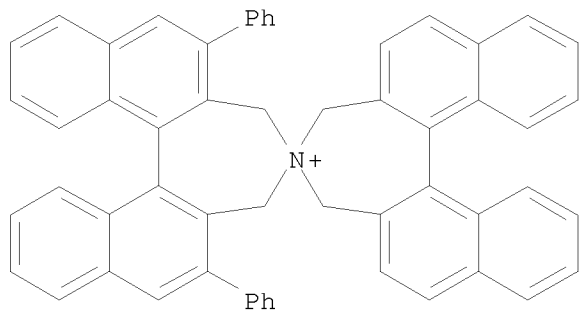


PAGE 2-A



10/587,467

L11 ANSWER 237 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 735252-69-4 REGISTRY  
ED Entered STN: 29 Aug 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-diphenyl-, (11bS,11'bS)- (9CI) (CA INDEX NAME)  
MF C56 H40 N  
CI COM  
SR CA

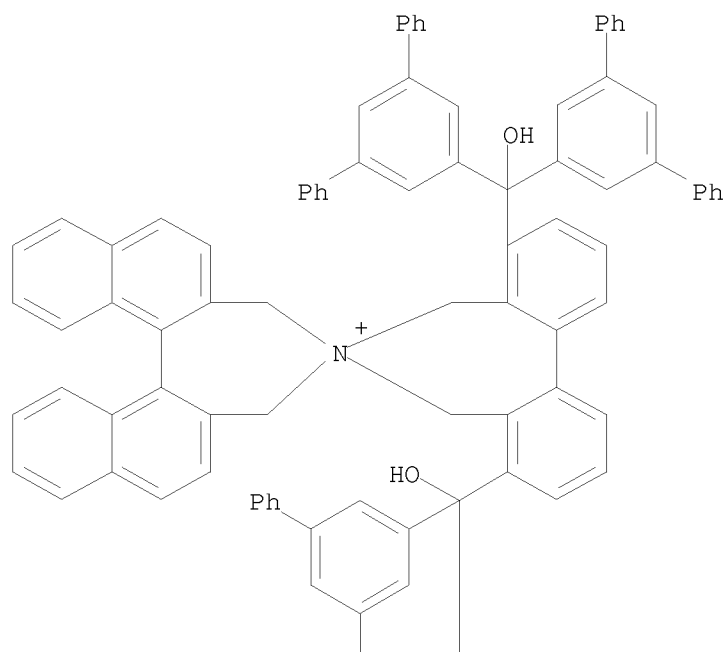




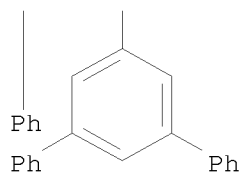
10/587,467

L11 ANSWER 238 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 733738-99-3 REGISTRY  
ED Entered STN: 27 Aug 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-4,8-bis[hydroxybis([1,1':3',1''-terphenyl]-5'-  
yl)methyl]-, (11aR,11'bS)- (9CI) (CA INDEX NAME)  
MF C110 H80 N O2  
CI COM  
SR CA

PAGE 1-A



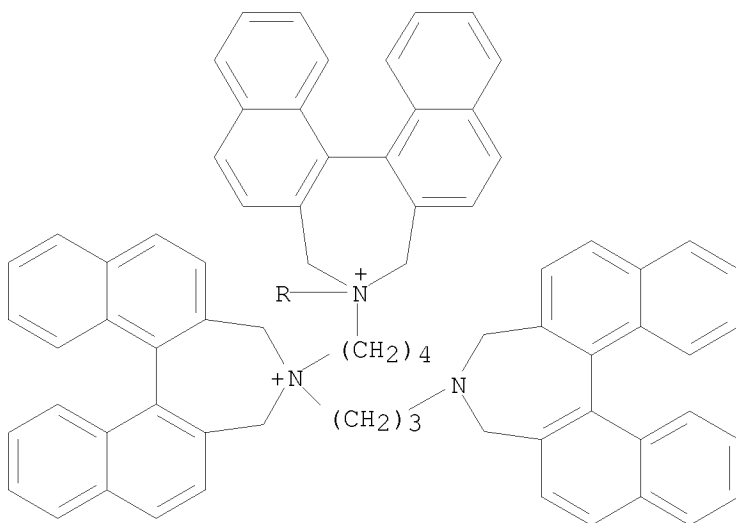
PAGE 2-A



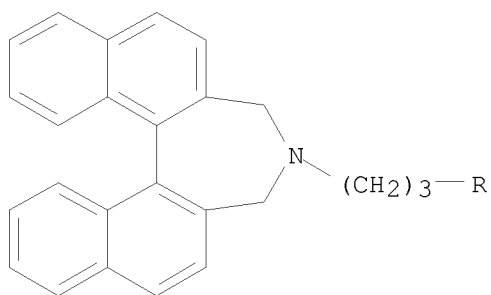
10/587,467

L11 ANSWER 239 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 730937-39-0 REGISTRY  
ED Entered STN: 22 Aug 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4'-(1,4-butanediyl)bis[4-[3-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-  
e]azepin-4-yl]propyl]-4,5-dihydro-, (11bS,11'bs)- (9CI) (CA INDEX NAME)  
MF C98 H84 N4  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A



10/587,467

```
=> d 111 235-234
'235-234' IS NOT A VALID FORMAT FOR FILE 'REGISTRY'
```

The following are valid formats:

Substance information can be displayed by requesting individual fields or predefined formats. The predefined substance formats are: (RN = CAS Registry Number)

```
REG      - RN
SAM      - Index Name, MF, and structure - no RN
FIDE     - All substance data, except sequence data
IDE      - FIDE, but only 50 names
SQIDE    - IDE, plus sequence data
SQIDE3   - Same as SQIDE, but 3-letter amino acid codes are used
SQD      - Protein sequence data, includes RN
SQD3     - Same as SQD, but 3-letter amino acid codes are used
SQN      - Protein sequence name information, includes RN
```

```
EPROP   - Table of experimental properties
PPROP   - Table of predicted properties
PROP    - EPROP, ETAG, PPROP and SPEC
```

Any CA File format may be combined with any substance format to obtain CA references citing the substance. The substance formats must be cited first. The CA File predefined formats are:

```
ABS     -- Abstract
APPS    -- Application and Priority Information
BIB     -- CA Accession Number, plus Bibliographic Data
CAN     -- CA Accession Number
CBIB    -- CA Accession Number, plus Bibliographic Data (compressed)
IND     -- Index Data
IPC     -- International Patent Classification
PATS    -- PI, SO
STD     -- BIB, IPC, and NCL
```

```
IABS    -- ABS, indented, with text labels
IBIB    -- BIB, indented, with text labels
ISTD    -- STD format, indented
```

```
OBIB    ----- AN, plus Bibliographic Data (original)
OIBIB   ----- OBIB, indented with text labels
```

```
SBIB    ----- BIB, no citations
SIBIB   ----- IBIB, no citations
```

The ALL format gives FIDE BIB ABS IND RE, plus sequence data when it is available.

The MAX format is the same as ALL.

The IALL format is the same as ALL with BIB ABS and IND indented, with text labels.

For additional information, please consult the following help messages:

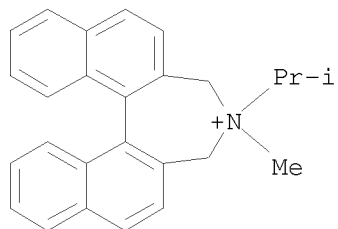
HELP DFIELDS -- To see a complete list of individual display fields.

10/587,467

HELP FORMATS -- To see detailed descriptions of the predefined formats.  
ENTER DISPLAY FORMAT (IDE):=> d 111 230-234

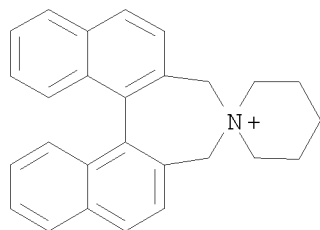
10/587,467

L11 ANSWER 230 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 743395-50-8 REGISTRY  
ED Entered STN: 12 Sep 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-methyl-4-(1-methylethyl)-, stereoisomer (9CI) (CA INDEX  
NAME)  
MF C26 H26 N  
CI COM  
SR CA



10/587,467

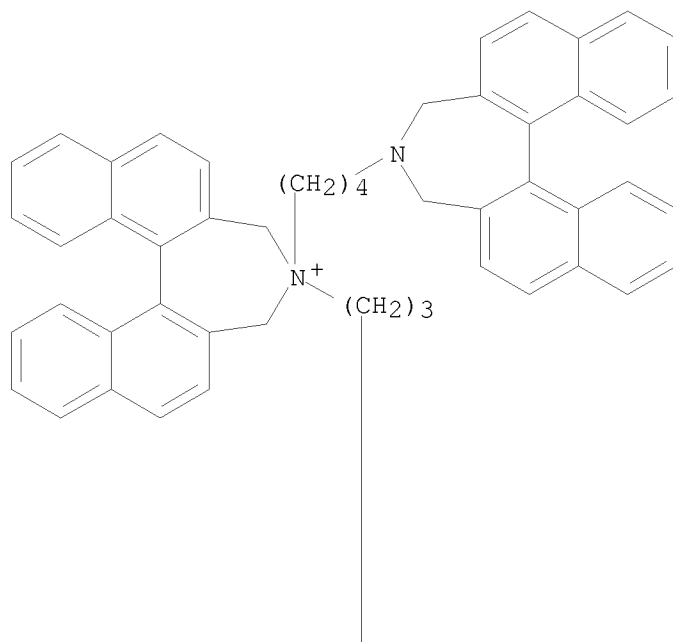
L11 ANSWER 231 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 742675-09-8 REGISTRY  
ED Entered STN: 12 Sep 2004  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium], 3,5-dihydro-,  
(R)- (9CI) (CA INDEX NAME)  
MF C27 H26 N  
CI COM  
SR CA



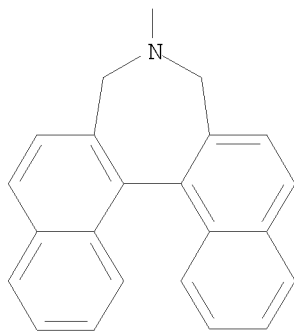
10/587,467

L11 ANSWER 232 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 740798-14-5 REGISTRY  
ED Entered STN: 07 Sep 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4-[4-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]butyl]-4-[3-  
[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]propyl]-4,5-  
dihydro-, (11bS)- (9CI) (CA INDEX NAME)  
MF C73 H62 N3  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A

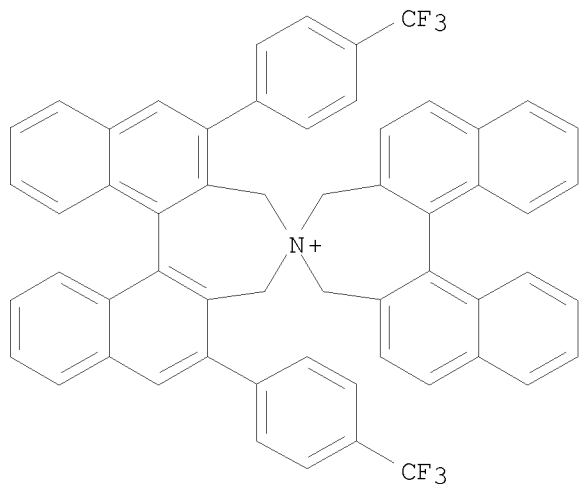


10/587,467



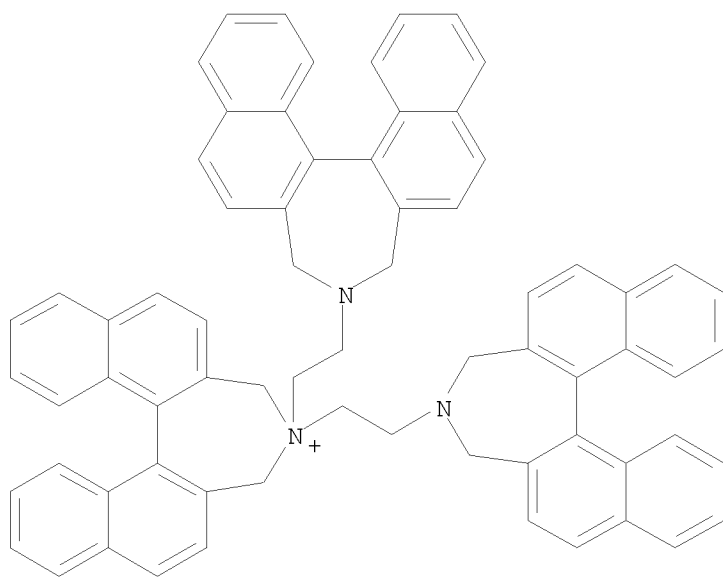
10/587,467

L11 ANSWER 233 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 738574-61-3 REGISTRY  
ED Entered STN: 03 Sep 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[4-(trifluoromethyl)phenyl]-, (11bS,11'bS)-  
(9CI) (CA INDEX NAME)  
MF C58 H38 F6 N  
CI COM  
SR CA



10/587,467

L11 ANSWER 234 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 737755-30-5 REGISTRY  
ED Entered STN: 02 Sep 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-bis[2-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]ethyl]-  
4,5-dihydro-, (11bS)- (9CI) (CA INDEX NAME)  
MF C70 H56 N3  
CI COM  
SR CA



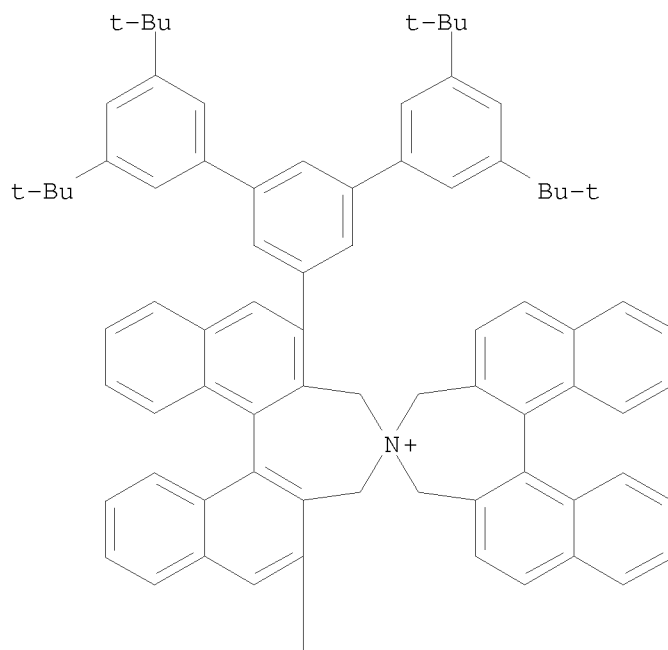
10/587,467

=> d 111 225-229

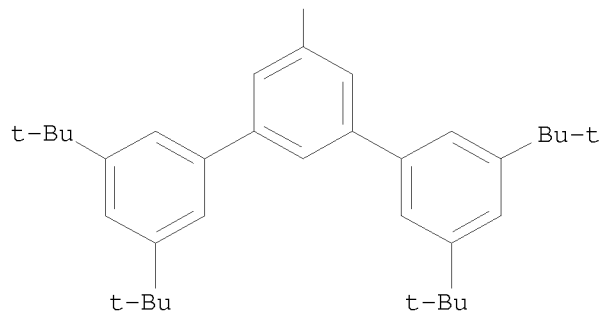
10/587,467

L11 ANSWER 225 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 746601-93-4 REGISTRY  
ED Entered STN: 17 Sep 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-  
dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bS,11'bs)- (9CI) (CA  
INDEX NAME)  
MF C112 H120 N  
CI COM  
SR CA

PAGE 1-A

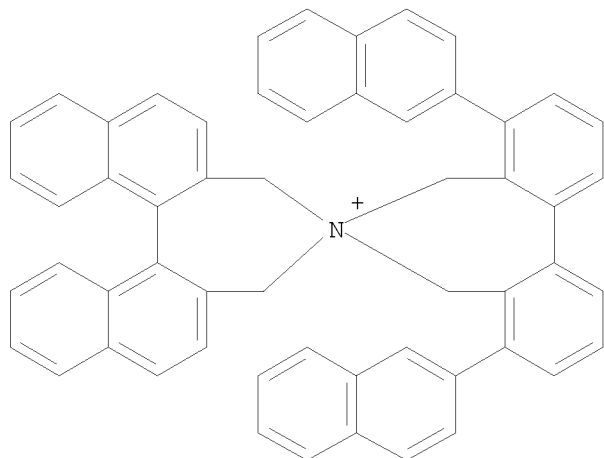


PAGE 2-A



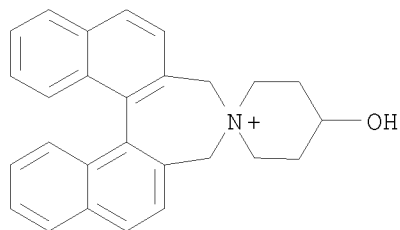
10/587,467

L11 ANSWER 226 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 744192-09-4 REGISTRY  
ED Entered STN: 14 Sep 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-4,8-di-2-naphthalenyl-, (11'bS)- (9CI) (CA INDEX  
NAME)  
MF C56 H40 N  
CI COM  
SR CA



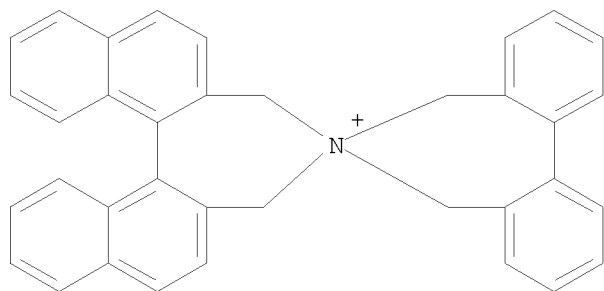
10/587,467

L11 ANSWER 227 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 744177-08-0 REGISTRY  
ED Entered STN: 14 Sep 2004  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperidinium],  
3,5-dihydro-4'-hydroxy-, (R)- (9CI) (CA INDEX NAME)  
MF C27 H26 N O  
CI COM  
SR CA



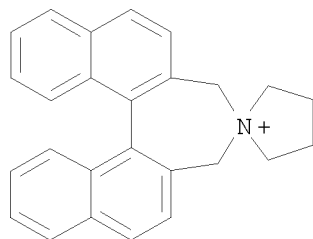
10/587,467

L11 ANSWER 228 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 743414-52-0 REGISTRY  
ED Entered STN: 13 Sep 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-, (11'bs)- (9CI) (CA INDEX NAME)  
MF C36 H28 N  
CI COM  
SR CA



10/587,467

L11 ANSWER 229 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 743399-41-9 REGISTRY  
ED Entered STN: 12 Sep 2004  
CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-pyrrolidinium], 3,5-dihydro-,  
(R)- (9CI) (CA INDEX NAME)  
MF C26 H24 N  
CI COM  
SR CA





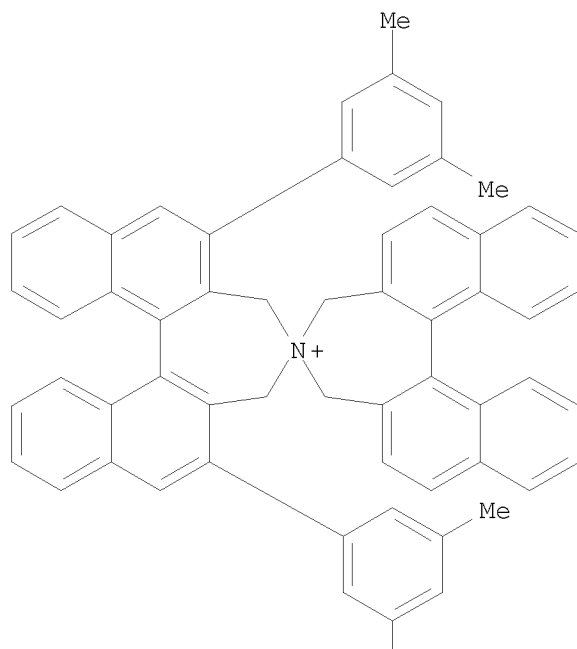
10/587,467

=> d 111 220-224

10/587,467

L11 ANSWER 220 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 752199-54-5 REGISTRY  
ED Entered STN: 27 Sep 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,5-dimethylphenyl)-3,3',5,5'-tetrahydro-, (11bS,11'bs)- (9CI)  
(CA INDEX NAME)  
MF C60 H48 N  
CI COM  
SR CA

PAGE 1-A

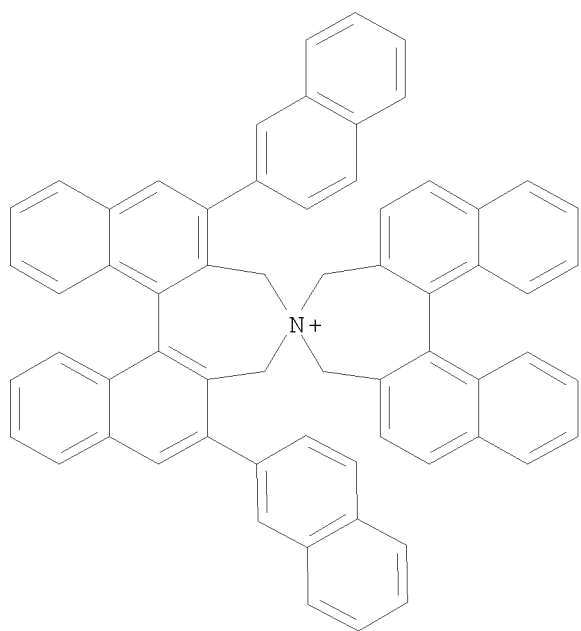


PAGE 2-A

Me

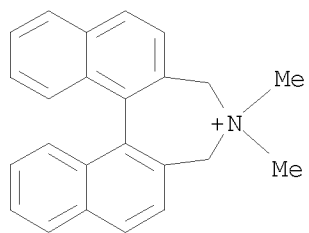
10/587,467

L11 ANSWER 221 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 752196-47-7 REGISTRY  
ED Entered STN: 27 Sep 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, (11bR,11'bS)- (9CI) (CA  
INDEX NAME)  
MF C64 H44 N  
CI COM  
SR CA



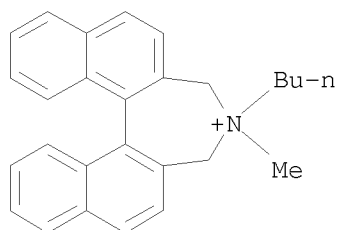
10/587,467

```
L11 ANSWER 222 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN   752160-76-2  REGISTRY
ED   Entered STN:   26 Sep 2004
CN   7H-Dinaphth[2,1-c:1',2'-e]azepinium, 8,9-dihydro-8,8-dimethyl- (CA INDEX
      NAME)
OTHER CA INDEX NAMES:
CN   3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-dimethyl- (9CI)
MF   C24 H22 N
CI   COM
SR   CA
```



10/587,467

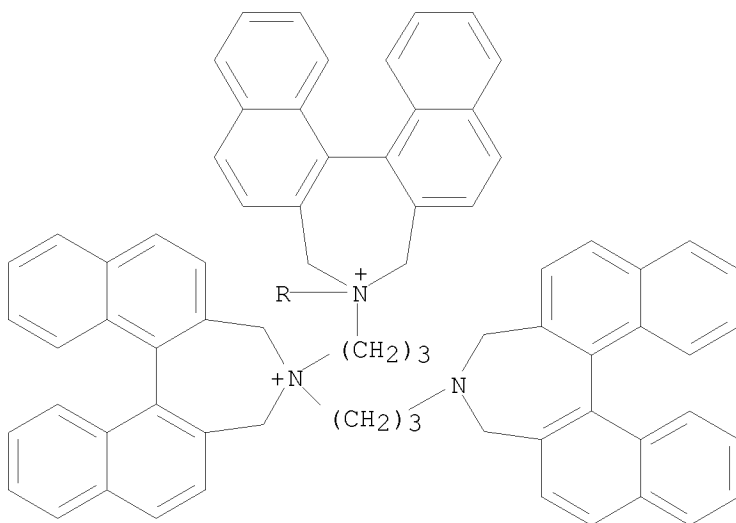
L11 ANSWER 223 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 749820-10-8 REGISTRY  
ED Entered STN: 22 Sep 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4-butyl-4,5-dihydro-4-methyl-,  
stereoisomer (9CI) (CA INDEX NAME)  
MF C27 H28 N  
CI COM  
SR CA



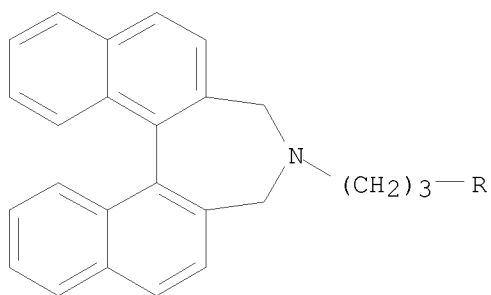
10/587,467

L11 ANSWER 224 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 749208-23-9 REGISTRY  
ED Entered STN: 22 Sep 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4'-(1,3-propanediyl)bis[4-[3-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-  
e]azepin-4-yl]propyl]-4,5-dihydro-, (11bS,11'bS)- (9CI) (CA INDEX NAME)  
MF C97 H82 N4  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A



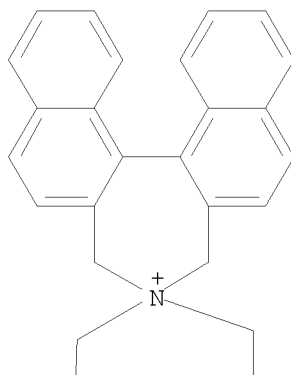
10/587,467

=> d 111 215-219

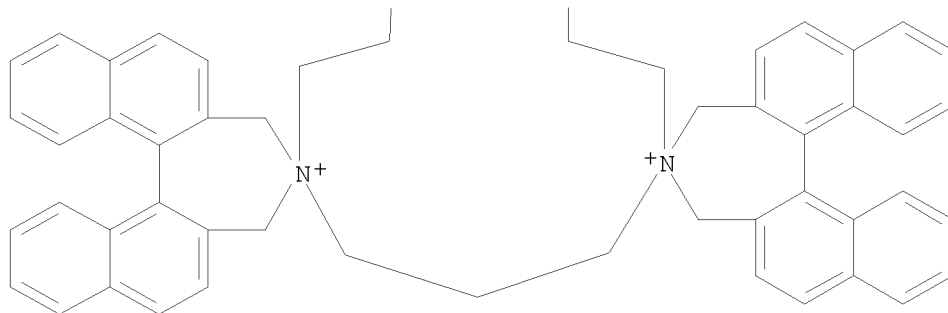
10/587,467

L11 ANSWER 215 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 754977-82-7 REGISTRY  
ED Entered STN: 01 Oct 2004  
CN Trispiro[1,5,9-triazoniacyclododecane-1,4':5,4'':9,4'''-  
tris[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',3'',3''',5',5'',5'''-hexahydro-, (11'bS,11''bS,11'''bS)- (9CI) (CA  
INDEX NAME)  
MF C75 H66 N3  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A

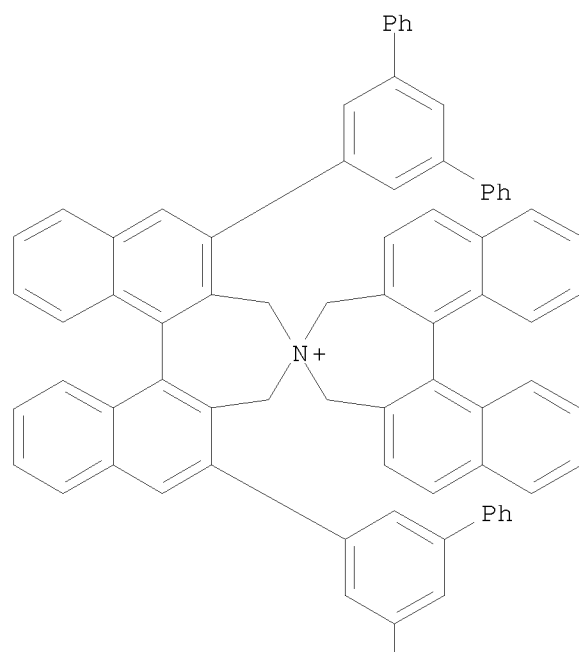




10/587,467

L11 ANSWER 216 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 753446-43-4 REGISTRY  
ED Entered STN: 29 Sep 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis([1,1':3',1''-terphenyl]-5'-yl)-3,3',5,5'-tetrahydro-,  
(11bS,11'bS)- (9CI) (CA INDEX NAME)  
MF C80 H56 N  
CI COM  
SR CA

PAGE 1-A

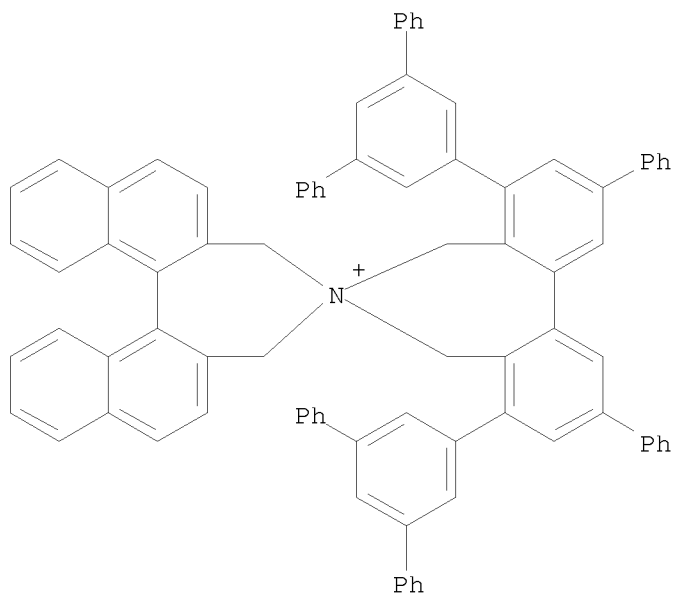


PAGE 2-A



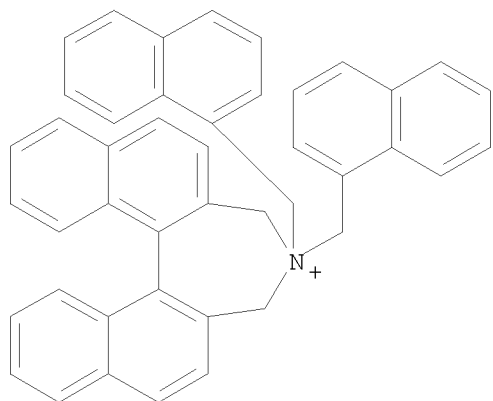
10/587,467

L11 ANSWER 217 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 753443-74-2 REGISTRY  
ED Entered STN: 29 Sep 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-2,10-diphenyl-4,8-bis([1,1':3',1''-terphenyl]-5'-yl)-  
, (11'bs)- (9CI) (CA INDEX NAME)  
MF C84 H60 N  
CI COM  
SR CA



10/587,467

L11 ANSWER 218 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 753435-76-6 REGISTRY  
ED Entered STN: 29 Sep 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-bis(1-naphthalenylmethyl)-, (11bS)- (9CI) (CA INDEX NAME)  
MF C44 H34 N  
CI COM  
SR CA



10/587,467

L11 ANSWER 219 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN

RN 753434-95-6 REGISTRY

ED Entered STN: 29 Sep 2004

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,13'-  
[1,4,7,10]tetraoxa[13]azacyclopentadecanium], 7,9-dihydro- (CA INDEX  
NAME)

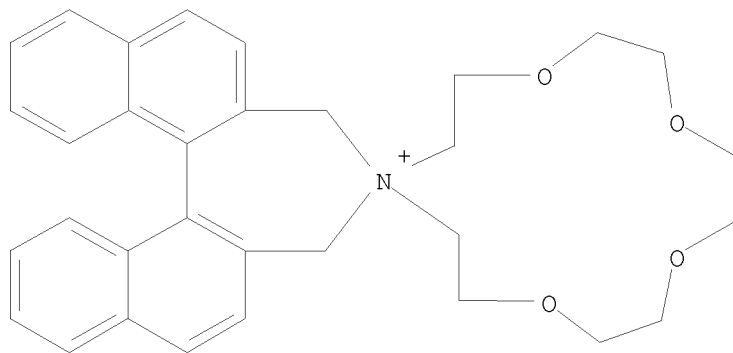
OTHER CA INDEX NAMES:

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepinium-4,13'-  
[1,4,7,10]tetraoxa[13]azoniacyclopentadecane], 3,5-dihydro- (9CI)

MF C32 H36 N O4

CI COM

SR CA

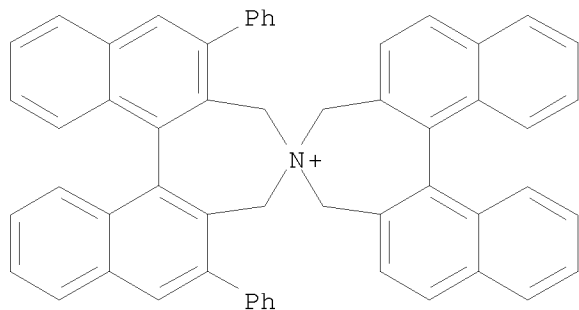


10/587,467

=> d 111 210-214

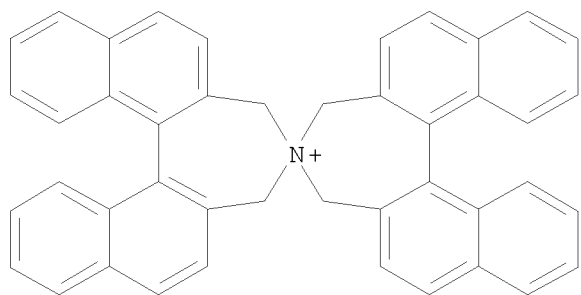
10/587,467

L11 ANSWER 210 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756511-44-1 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-diphenyl-, (11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C56 H40 N  
CI COM  
SR CA



10/587,467

L11 ANSWER 211 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756511-41-8 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium], 3,3',5,5'-tetrahydro-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C44 H32 N  
CI COM  
SR CA



10/587,467

L11 ANSWER 212 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN

RN 756494-04-9 REGISTRY

ED Entered STN: 04 Oct 2004

CN 8,8'-Spirobi[8H-dinaphth[2,1-c:1',2'-e]azepinium],  
6',10'-bis[3,5-bis(trifluoromethyl)phenyl]-7,7',9,9'-tetrahydro- (CA  
INDEX NAME)

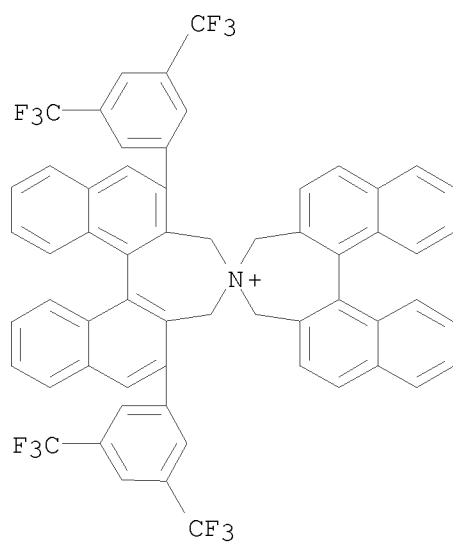
OTHER CA INDEX NAMES:

CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro- (9CI)

MF C60 H36 F12 N

CI COM

SR CA

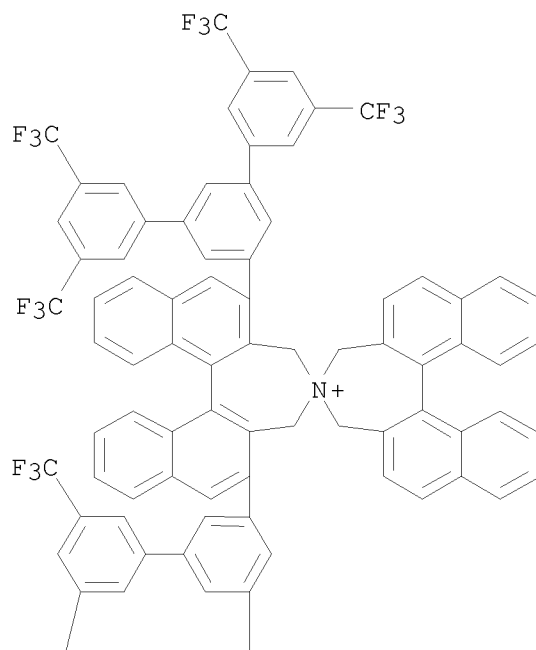




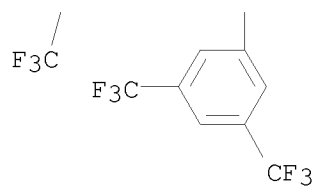
10/587,467

L11 ANSWER 213 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756494-02-7 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-  
tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]- (9CI) (CA INDEX  
NAME)  
MF C88 H48 F24 N  
CI COM  
SR CA

PAGE 1-A



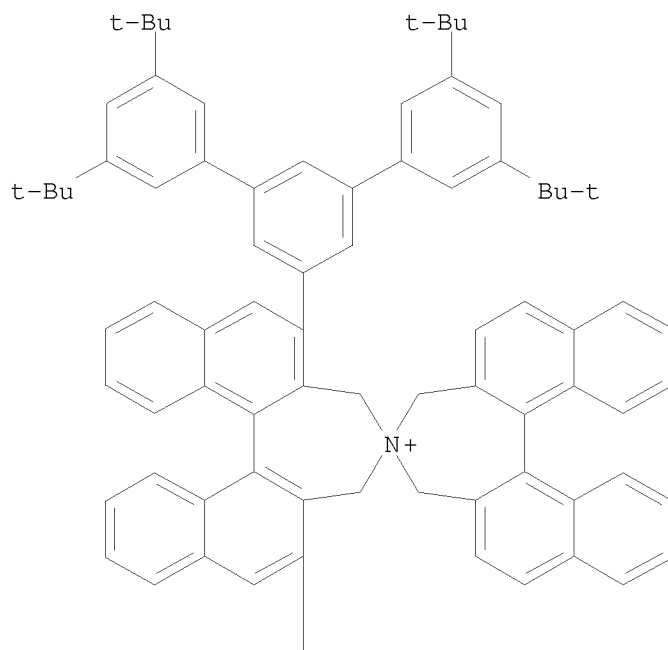
PAGE 2-A



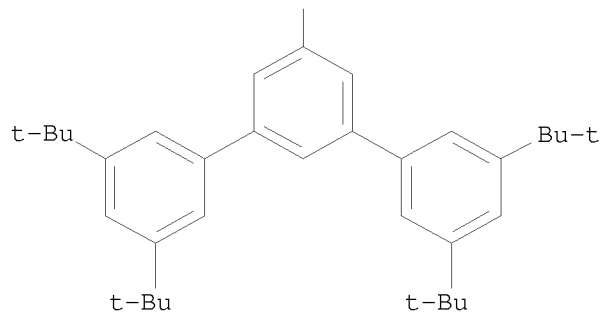
10/587,467

L11 ANSWER 214 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 755750-10-8 REGISTRY  
ED Entered STN: 01 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[3,3'',5,5''-tetrakis(1,1-  
dimethylethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bR,11'bR)- (9CI) (CA  
INDEX NAME)  
MF C112 H120 N  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A



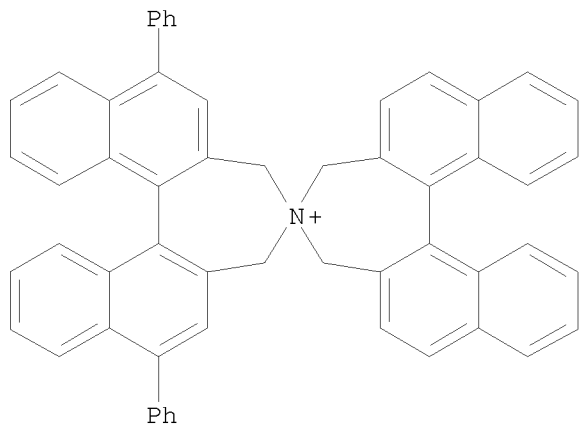
10/587,467

10/587,467

=> d 111 200-209

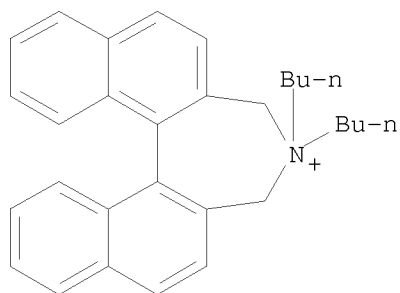
10/587,467

```
L11 ANSWER 200 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN 757185-00-5  REGISTRY
ED Entered STN: 06 Oct 2004
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],
3,3',5,5'-tetrahydro-1,7-diphenyl-, (11bS,11'bS)- (9CI) (CA INDEX NAME)
MF C56 H40 N
CI COM
SR CA
```



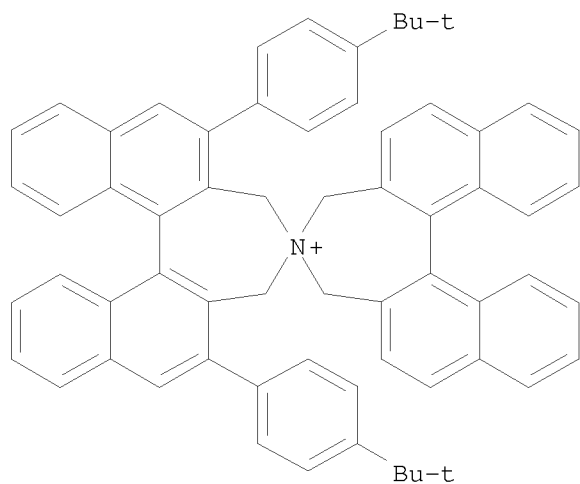
10/587,467

L11 ANSWER 201 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756818-23-2 REGISTRY  
ED Entered STN: 05 Oct 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,4-dibutyl-4,5-dihydro-, (11bS)-  
(9CI) (CA INDEX NAME)  
MF C30 H34 N  
CI COM  
SR CA



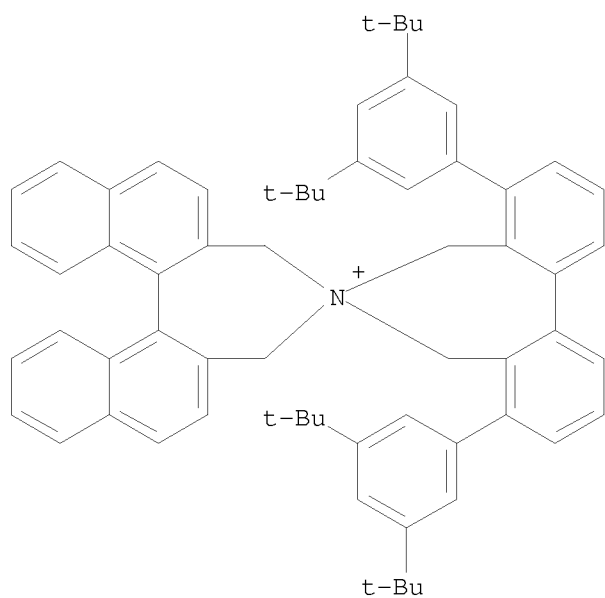
10/587,467

L11 ANSWER 202 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756512-73-9 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[4-(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-, (11bR,11'bR)-  
(9CI) (CA INDEX NAME)  
MF C64 H56 N  
CI COM  
SR CA



10/587,467

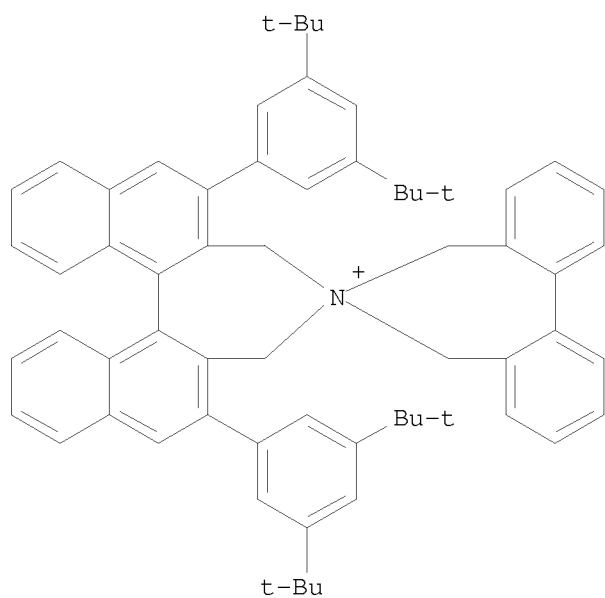
L11 ANSWER 203 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756511-67-8 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
4,8-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3',5,5',7-tetrahydro-, (11'bR)-  
(9CI) (CA INDEX NAME)  
MF C64 H68 N  
CI COM  
SR CA





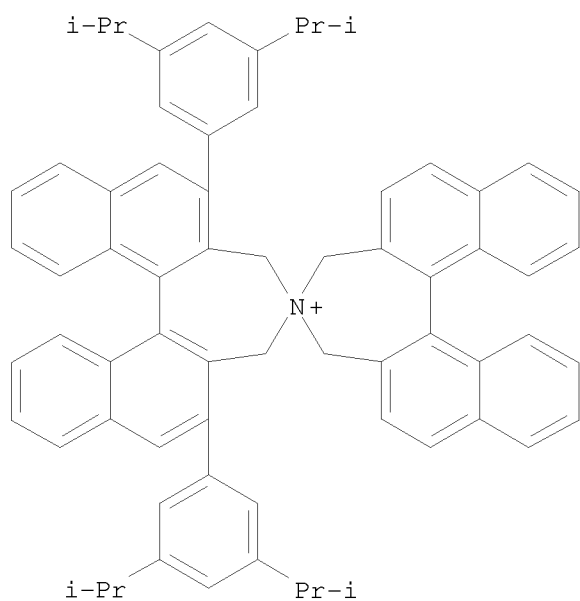
10/587,467

L11 ANSWER 204 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756511-64-5 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
2',6'-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3',5,5',7-tetrahydro-,  
(11'bR)- (9CI) (CA INDEX NAME)  
MF C64 H68 N  
CI COM  
SR CA



10/587,467

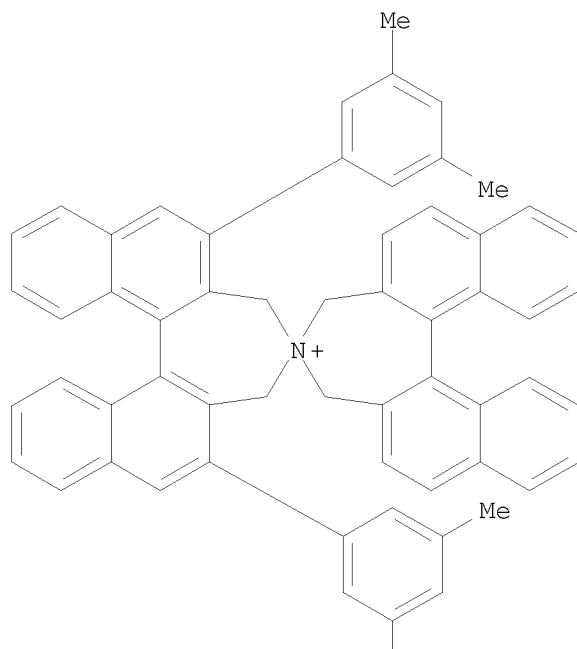
L11 ANSWER 205 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756511-60-1 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1-methylethyl)phenyl]-3,3',5,5'-tetrahydro-, (11bR,11'bR)-  
(9CI) (CA INDEX NAME)  
MF C68 H64 N  
CI COM  
SR CA



10/587,467

L11 ANSWER 206 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756511-57-6 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,5-dimethylphenyl)-3,3',5,5'-tetrahydro-, (11bR,11'bR)- (9CI)  
(CA INDEX NAME)  
MF C60 H48 N  
CI COM  
SR CA

PAGE 1-A



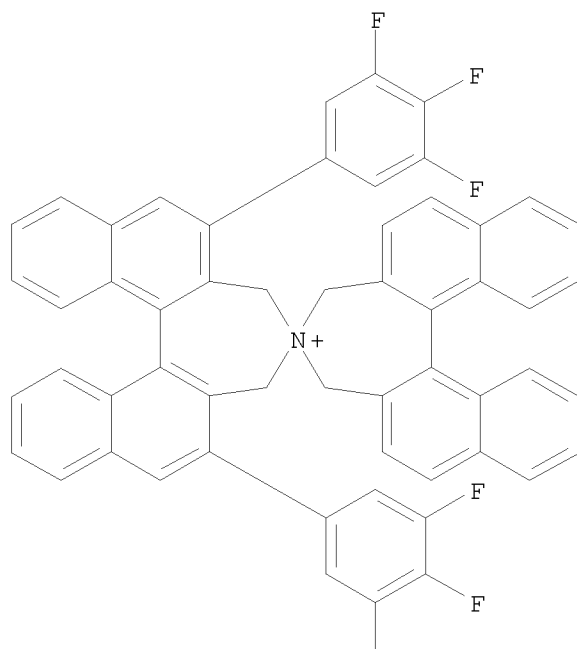
PAGE 2-A

Me

10/587,467

L11 ANSWER 207 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756511-54-3 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis(3,4,5-trifluorophenyl)-, (11bR,11'bR)- (9CI)  
(CA INDEX NAME)  
MF C56 H34 F6 N  
CI COM  
SR CA

PAGE 1-A



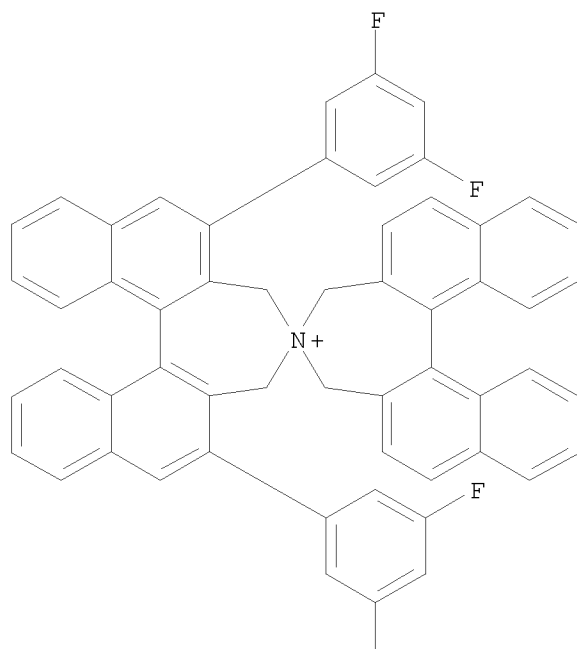
PAGE 2-A

F

10/587,467

L11 ANSWER 208 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756511-51-0 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,5-difluorophenyl)-3,3',5,5'-tetrahydro-, (11bR,11'bR)- (9CI)  
(CA INDEX NAME)  
MF C56 H36 F4 N  
CI COM  
SR CA

PAGE 1-A

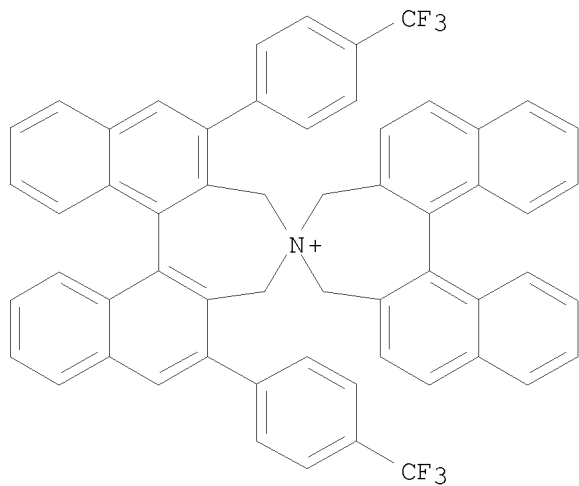


PAGE 2-A

F

10/587,467

L11 ANSWER 209 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 756511-47-4 REGISTRY  
ED Entered STN: 04 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[4-(trifluoromethyl)phenyl]-, (11bR,11'bR)-  
(9CI) (CA INDEX NAME)  
MF C58 H38 F6 N  
CI COM  
SR CA



10/587,467

=> d 111 190-199

10/587,467

L11 ANSWER 190 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN

RN 770706-13-3 REGISTRY

ED Entered STN: 28 Oct 2004

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,16'-  
[1,4,7,10,13]pentaosa[16]azacyclooctadecanium], 7,9-dihydro- (CA INDEX  
NAME)

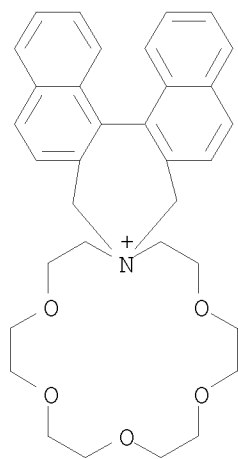
OTHER CA INDEX NAMES:

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepinium-4,16'-  
[1,4,7,10,13]pentaosa[16]azoniacyclooctadecane], 3,5-dihydro- (9CI)

MF C34 H40 N O5

CI COM

SR CA





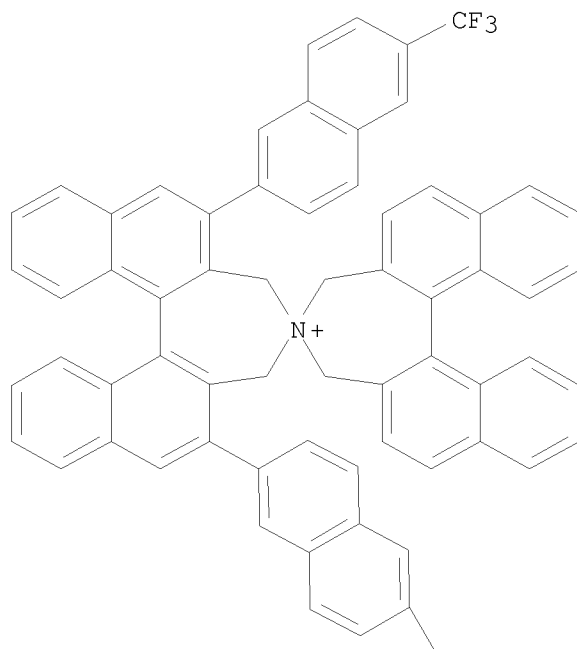


10/587,467

10/587,467

L11 ANSWER 192 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 768353-97-5 REGISTRY  
ED Entered STN: 25 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis[6-(trifluoromethyl)-2-naphthalenyl]-,  
(11bS,11'bS)- (9CI) (CA INDEX NAME)  
MF C66 H42 F6 N  
CI COM  
SR CA

PAGE 1-A

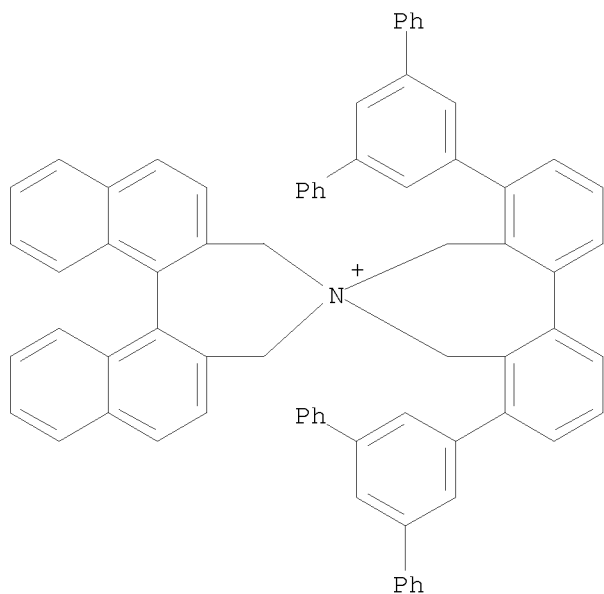


PAGE 2-A



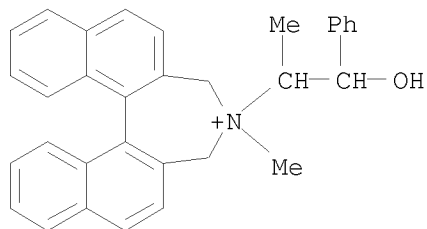
10/587,467

L11 ANSWER 193 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 767281-22-1 REGISTRY  
ED Entered STN: 22 Oct 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-4,8-bis([1,1':3',1''-terphenyl]-5'-yl)-, (11'bS)-  
(9CI) (CA INDEX NAME)  
MF C72 H52 N  
CI COM  
SR CA



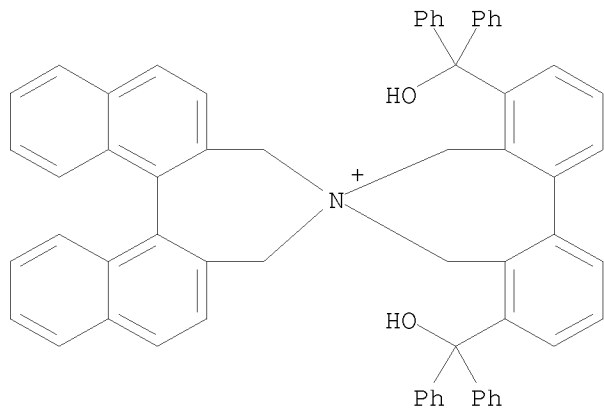
10/587,467

L11 ANSWER 194 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 767259-88-1 REGISTRY  
ED Entered STN: 22 Oct 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-(2-hydroxy-1-methyl-2-phenylethyl)-4-methyl-, stereoisomer  
(9CI) (CA INDEX NAME)  
MF C32 H30 N O  
CI COM  
SR CA



10/587,467

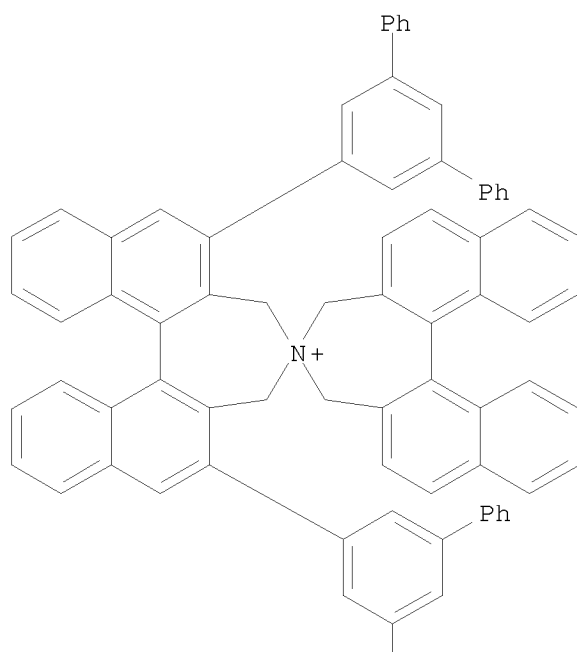
L11 ANSWER 195 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 766508-69-4 REGISTRY  
ED Entered STN: 21 Oct 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-4,8-bis(hydroxydiphenylmethyl)-, (11aR,11'bS)- (9CI)  
(CA INDEX NAME)  
MF C62 H48 N O2  
CI COM  
SR CA



10/587,467

L11 ANSWER 196 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 764642-29-7 REGISTRY  
ED Entered STN: 18 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis([1,1':3',1''-terphenyl]-5'-yl)-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C80 H56 N  
CI COM  
SR CA

PAGE 1-A

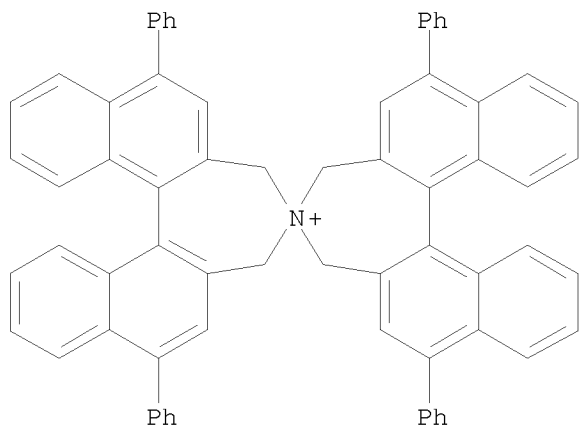


PAGE 2-A



10/587,467

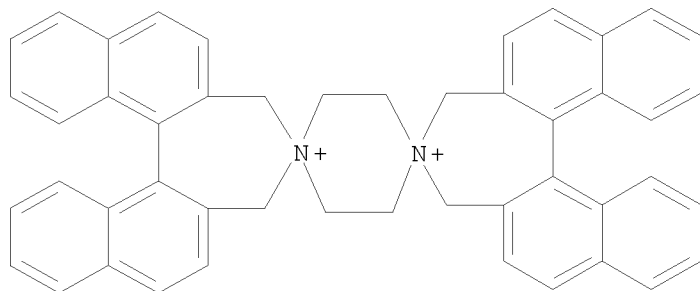
L11 ANSWER 197 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 761398-49-6 REGISTRY  
ED Entered STN: 13 Oct 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7'-tetraphenyl-, (11bS,11'bS)- (9CI) (CA  
INDEX NAME)  
MF C68 H48 N  
CI COM  
SR CA





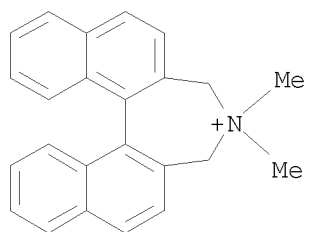
10/587,467

L11 ANSWER 198 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 760945-32-2 REGISTRY  
ED Entered STN: 12 Oct 2004  
CN Dispiro[4H-dinaphth[2,1-c:1',2'-e]azepinium-4,1'-piperazine-4',4''-  
[4H]dinaphth[2,1-c:1',2'-e]azepinium], 3,3'',5,5''-tetrahydro-,  
(11bS,11''bS)- (9CI) (CA INDEX NAME)  
MF C48 H40 N2  
CI COM  
SR CA



10/587,467

```
L11  ANSWER 199 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN   760916-44-7  REGISTRY
ED   Entered STN:  11 Oct 2004
CN   3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-dimethyl-, (R)- (9CI)
      (CA INDEX NAME)
MF   C24 H22 N
CI   COM
SR   CA
```

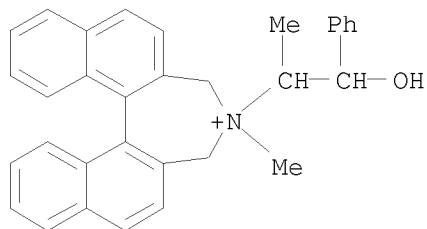


10/587,467

=> d 111 180-189

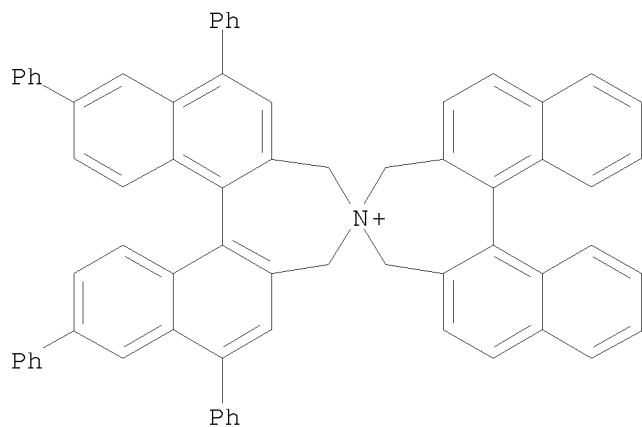
10/587,467

L11 ANSWER 180 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 779993-34-9 REGISTRY  
ED Entered STN: 12 Nov 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
(11bR)- (9CI) (CA INDEX NAME)  
MF C32 H30 N O  
CI COM  
SR CA



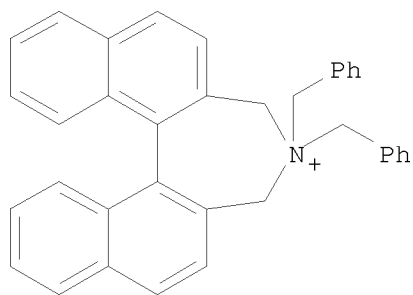
10/587,467

L11 ANSWER 181 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 777851-32-8 REGISTRY  
ED Entered STN: 10 Nov 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,7,9,14-tetraphenyl-, (11bS,11'bS)- (9CI) (CA INDEX  
NAME)  
MF C68 H48 N  
CI COM  
SR CA



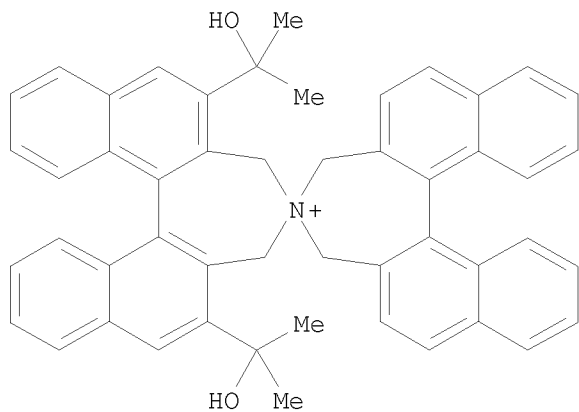
10/587,467

L11 ANSWER 182 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 777839-83-5 REGISTRY  
ED Entered STN: 10 Nov 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-bis(phenylmethyl)-,  
(11bS)- (9CI) (CA INDEX NAME)  
MF C36 H30 N  
CI COM  
SR CA



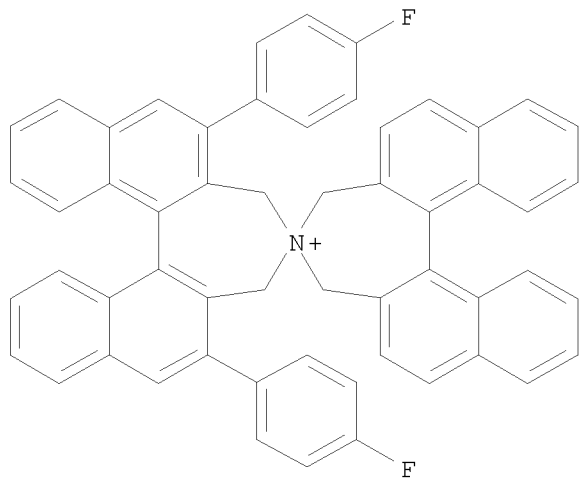
10/587,467

L11 ANSWER 183 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 776294-94-1 REGISTRY  
ED Entered STN: 08 Nov 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis(1-hydroxy-1-methylethyl)-, (11bS,11'bS)-  
(9CI) (CA INDEX NAME)  
MF C50 H44 N O2  
CI COM  
SR CA



10/587,467

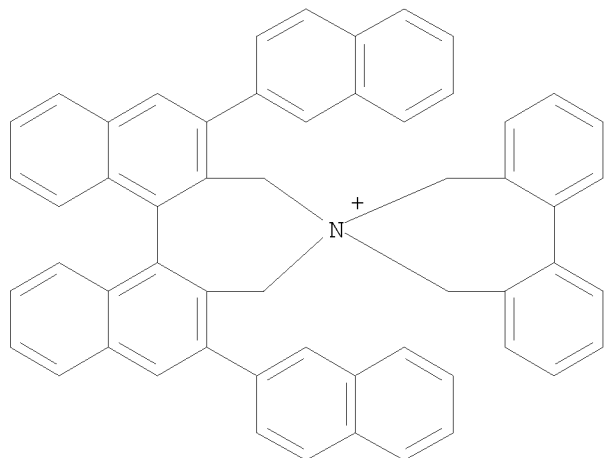
L11 ANSWER 184 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 774535-02-3 REGISTRY  
ED Entered STN: 04 Nov 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(4-fluorophenyl)-3,3',5,5'-tetrahydro-, (11bS,11'bS)- (9CI) (CA  
INDEX NAME)  
MF C56 H38 F2 N  
CI COM  
SR CA





10/587,467

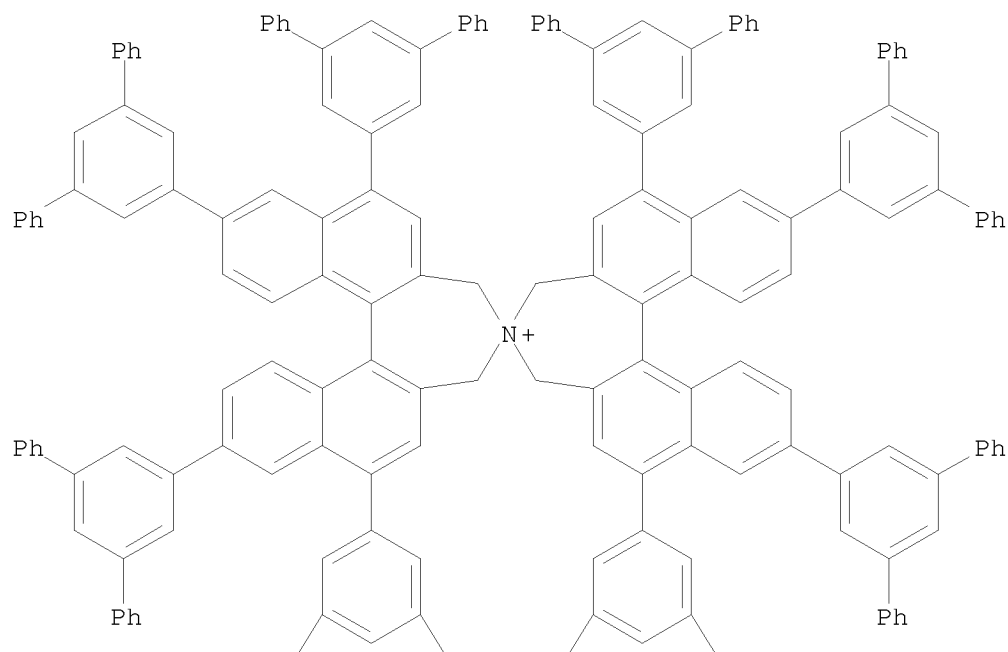
L11 ANSWER 185 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 774532-30-8 REGISTRY  
ED Entered STN: 04 Nov 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-2',6'-di-2-naphthalenyl-, (11'bS)- (9CI) (CA INDEX  
NAME)  
MF C56 H40 N  
CI COM  
SR CA



10/587,467

L11 ANSWER 186 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 774180-07-3 REGISTRY  
ED Entered STN: 03 Nov 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octakis([1,1':3',1''-terphenyl]-  
5'-yl)-, (11bS,11'bs)- (9CI) (CA INDEX NAME)  
MF C188 H128 N  
CI COM  
SR CA

PAGE 1-A

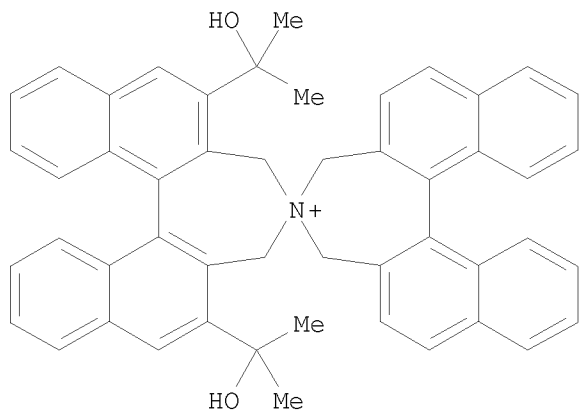


PAGE 2-A



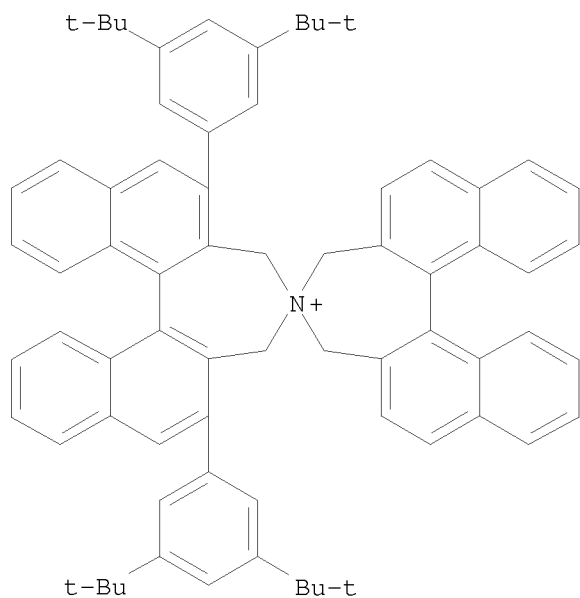
10/587,467

```
L11 ANSWER 187 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN 773055-31-5  REGISTRY
ED Entered STN: 01 Nov 2004
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],
3,3',5,5'-tetrahydro-2,6-bis(1-hydroxy-1-methylethyl)-, (11bR,11'bS)-
(9CI) (CA INDEX NAME)
MF C50 H44 N O2
CI COM
SR CA
```



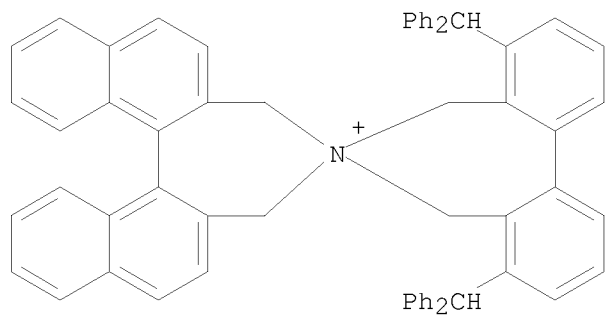
10/587,467

L11 ANSWER 188 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 773051-08-4 REGISTRY  
ED Entered STN: 01 Nov 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bS,11'bS)- (9CI) (CA INDEX NAME)  
MF C72 H72 N  
CI COM  
SR CA



10/587,467

L11 ANSWER 189 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 770709-69-8 REGISTRY  
ED Entered STN: 28 Oct 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
4,8-bis(diphenylmethyl)-3',5,5',7-tetrahydro-, (11'bS)- (9CI) (CA INDEX  
NAME)  
MF C62 H48 N  
CI COM  
SR CA

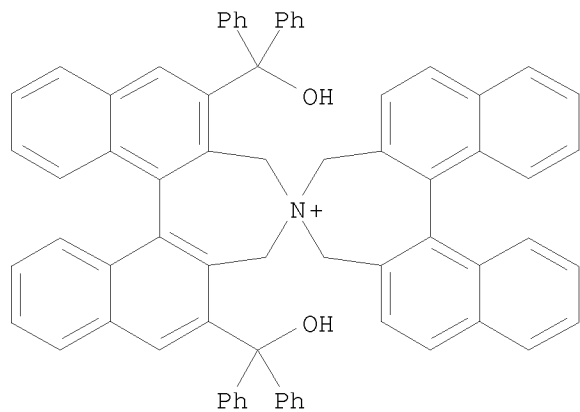


10/587,467

=> d 111 175-179

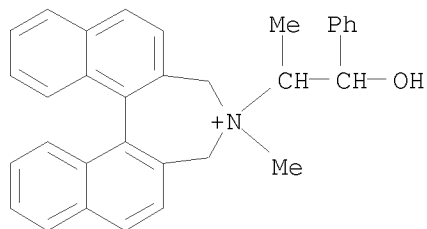
10/587,467

L11 ANSWER 175 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 785776-89-8 REGISTRY  
ED Entered STN: 22 Nov 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-bis(hydroxydiphenylmethyl)-, (11bR,11'bS)- (9CI)  
(CA INDEX NAME)  
MF C70 H52 N O2  
CI COM  
SR CA



10/587,467

```
L11  ANSWER 176 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN   784112-11-4  REGISTRY
ED   Entered STN:  18 Nov 2004
CN   3H-Dinaphth[2,1-c:1',2'-e]azepinium,
     4,5-dihydro-4-(2-hydroxy-1-methyl-2-phenylethyl)-4-methyl-, stereoisomer
     (9CI)  (CA INDEX NAME)
MF   C32 H30 N O
CI   COM
SR   CA
```





10/587,467

L11 ANSWER 177 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN

RN 784110-03-8 REGISTRY

ED Entered STN: 18 Nov 2004

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,1'-piperazinium], 7,9-dihydro-  
(CA INDEX NAME)

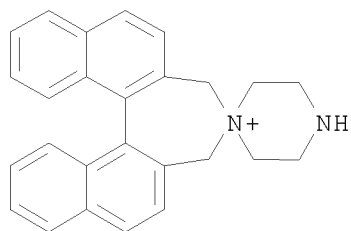
OTHER CA INDEX NAMES:

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,1'-piperazinium], 3,5-dihydro-  
(9CI)

MF C26 H25 N2

CI	COM
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

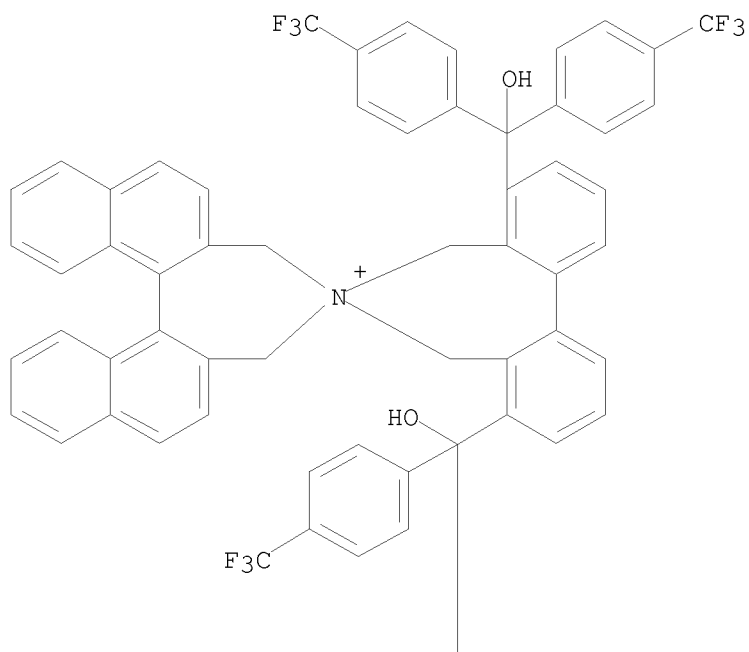
SR      CA



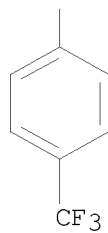
10/587,467

L11 ANSWER 178 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 781614-77-5 REGISTRY  
ED Entered STN: 16 Nov 2004  
CN Spiro[6H-dibenz[c,e]azepine-6,4'-[4H]dinaphth[2,1-c:1',2'-e]azepinium],  
3',5,5',7-tetrahydro-4,8-bis[hydroxybis[4-(trifluoromethyl)phenyl]methyl]-  
, (11aR,11'bS)- (9CI) (CA INDEX NAME)  
MF C66 H44 F12 N O2  
CI COM  
SR CA

PAGE 1-A

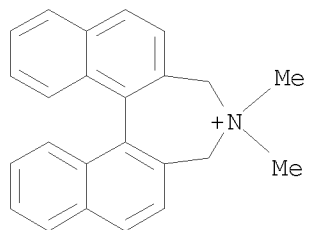


PAGE 2-A



10/587,467

```
L11  ANSWER 179 OF 260  REGISTRY  COPYRIGHT 2009 ACS on STN
RN    780009-26-9  REGISTRY
ED    Entered STN:  14 Nov 2004
CN    3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-dimethyl-, (S)- (9CI)
      (CA INDEX NAME)
MF    C24 H22 N
CI    COM
SR    CA
```

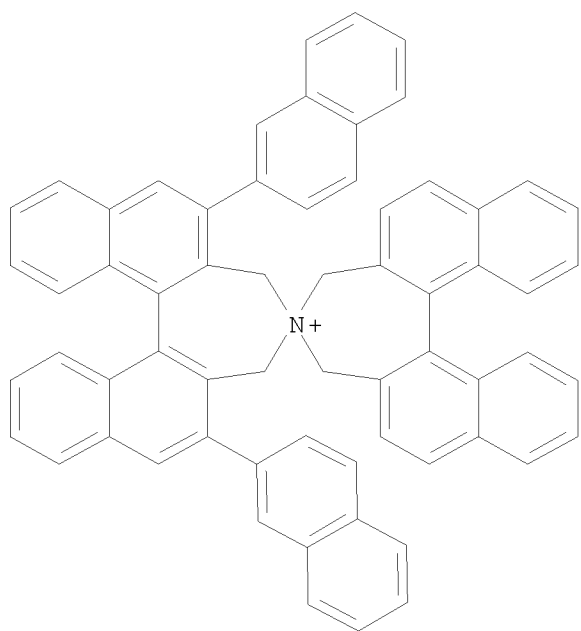


10/587,467

=> d 111 170-174

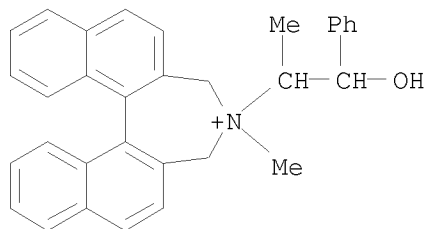
10/587,467

L11 ANSWER 170 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 793661-58-2 REGISTRY  
ED Entered STN: 07 Dec 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,6-di-2-naphthalenyl-, (11bS,11'bR)- (9CI) (CA  
INDEX NAME)  
MF C64 H44 N  
CI COM  
SR CA



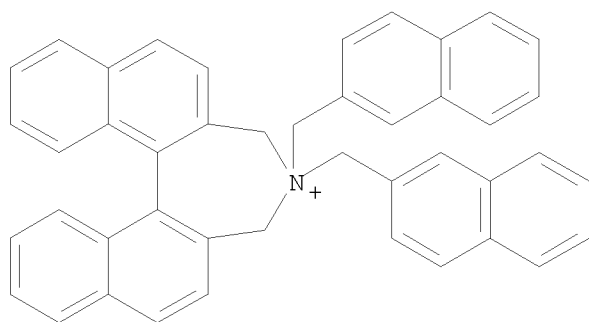
10/587,467

L11 ANSWER 171 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 793622-75-0 REGISTRY  
ED Entered STN: 06 Dec 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4-[(1S,2R)-2-hydroxy-1-methyl-2-phenylethyl]-4-methyl-,  
(11bS)- (9CI) (CA INDEX NAME)  
MF C32 H30 N O  
CI COM  
SR CA



10/587,467

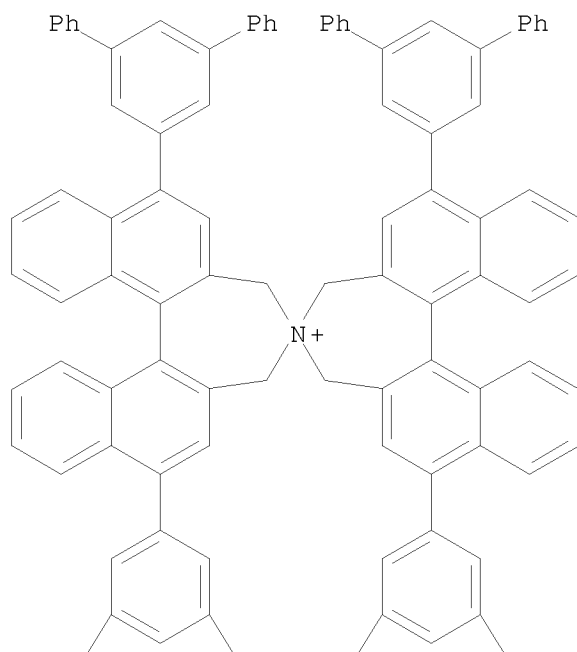
L11 ANSWER 172 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 791772-12-8 REGISTRY  
ED Entered STN: 03 Dec 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,5-dihydro-4,4-bis(2-naphthalenylmethyl)-, (11bS)- (9CI) (CA INDEX NAME)  
MF C44 H34 N  
CI COM  
SR CA



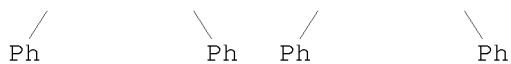
10/587,467

L11 ANSWER 173 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 789487-70-3 REGISTRY  
ED Entered STN: 28 Nov 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7'-tetrakis([1,1':3',1''-terphenyl]-5'-yl)-,  
(11bS,11'bS)- (9CI) (CA INDEX NAME)  
MF C116 H80 N  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A





10/587,467

L11 ANSWER 174 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN

RN 786612-27-9 REGISTRY

ED Entered STN: 22 Nov 2004

CN Spiro[8H-dinaphth[2,1-c:1',2'-e]azepine-8,4'-morpholinium], 7,9-dihydro-  
(CA INDEX NAME)

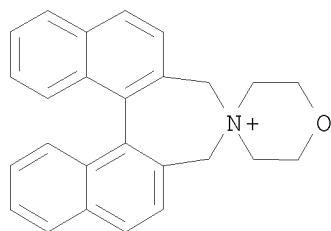
OTHER CA INDEX NAMES:

CN Spiro[4H-dinaphth[2,1-c:1',2'-e]azepine-4,4'-morpholinium], 3,5-dihydro-  
(9CI)

MF C26 H24 N O

CI COM

SR CA



10/587,467

=> d 111 165-169

10/587,467

L11 ANSWER 165 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN

RN 806650-81-7 REGISTRY

ED Entered STN: 02 Jan 2005

CN 7H-Dinaphth[2,1-c:1',2'-e]azepinium, 8,9-dihydro-8,8-di-2-propen-1-yl-  
(CA INDEX NAME)

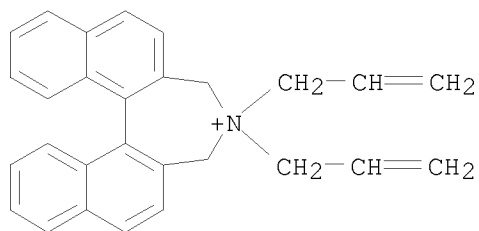
OTHER CA INDEX NAMES:

CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium, 4,5-dihydro-4,4-di-2-propenyl- (9CI)

MF C28 H26 N

CI COM

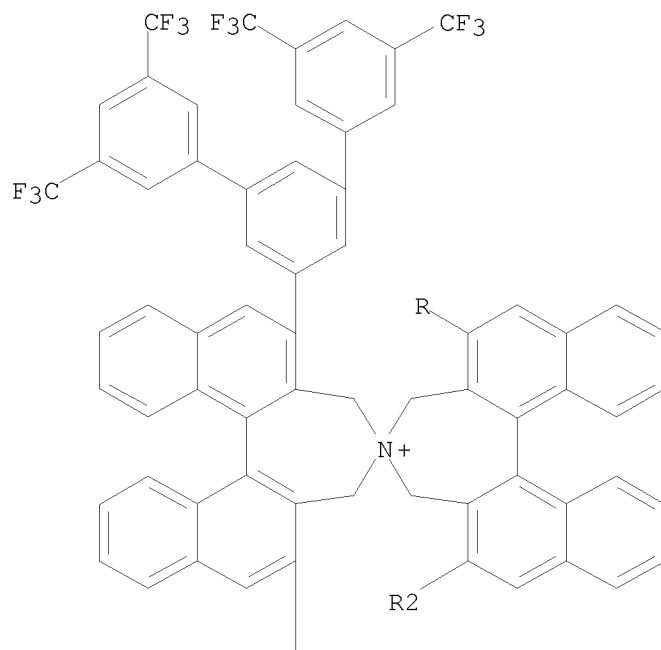
SR CA



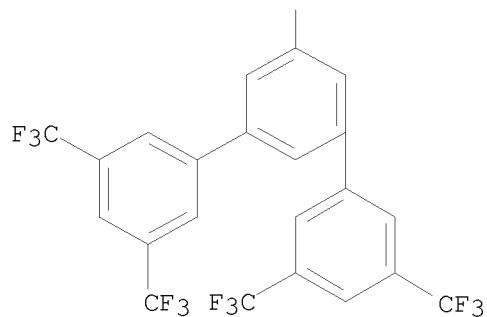
10/587,467

L11 ANSWER 166 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 794474-46-7 REGISTRY  
ED Entered STN: 08 Dec 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-2,2',6,6'-tetrakis[3,3'',5,5''-  
tetrakis(trifluoromethyl)[1,1':3',1''-terphenyl]-5'-yl]-, (11bR,11'bR)-  
(9CI) (CA INDEX NAME)  
MF C132 H64 F48 N  
CI COM  
SR CA

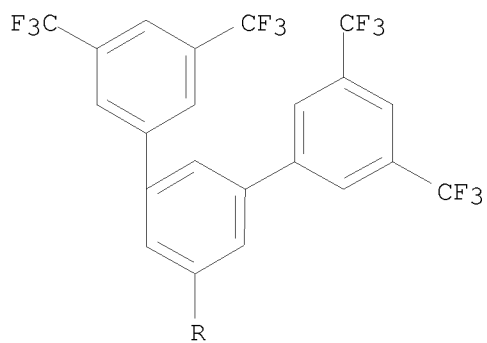
PAGE 1-A



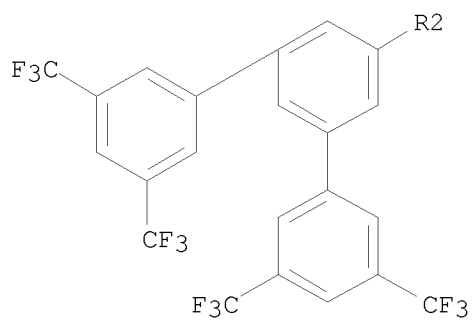
PAGE 2-A



PAGE 3-A



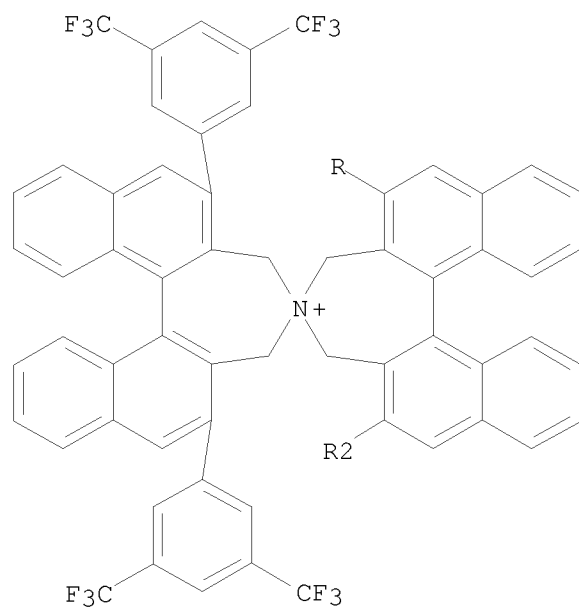
PAGE 4-A

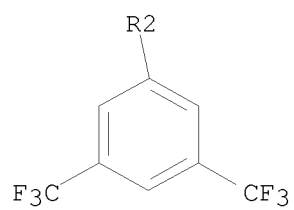
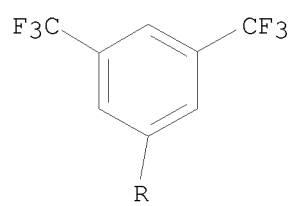


10/587,467

L11 ANSWER 167 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 794474-45-6 REGISTRY  
ED Entered STN: 08 Dec 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,2',6,6'-tetrakis[3,5-bis(trifluoromethyl)phenyl]-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C76 H40 F24 N  
CI COM  
SR CA

PAGE 1-A

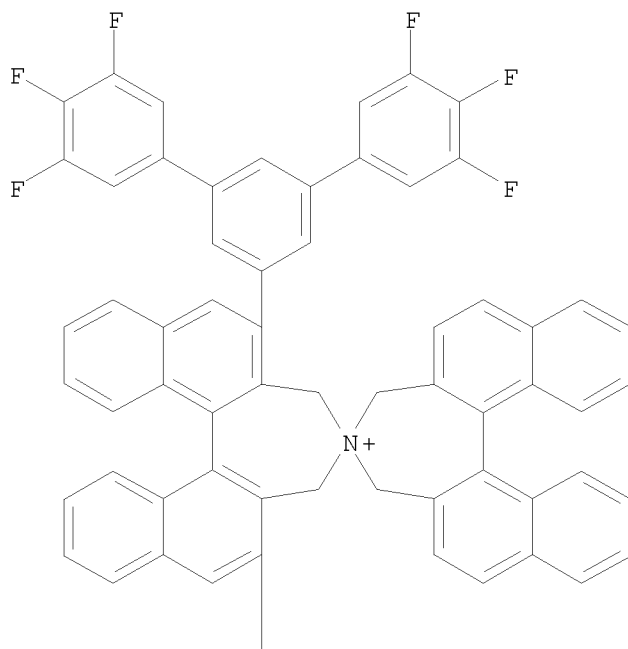




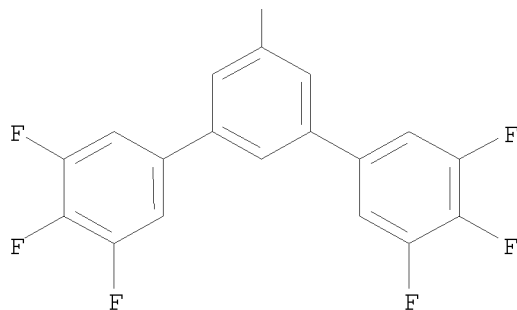
10/587,467

L11 ANSWER 168 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 794458-34-7 REGISTRY  
ED Entered STN: 08 Dec 2004  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
2,6-bis(3,3'',4,4'',5,5''-hexafluoro[1,1':3',1''-terphenyl]-5'-yl)-  
3,3',5,5'-tetrahydro-, (11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C80 H44 F12 N  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A

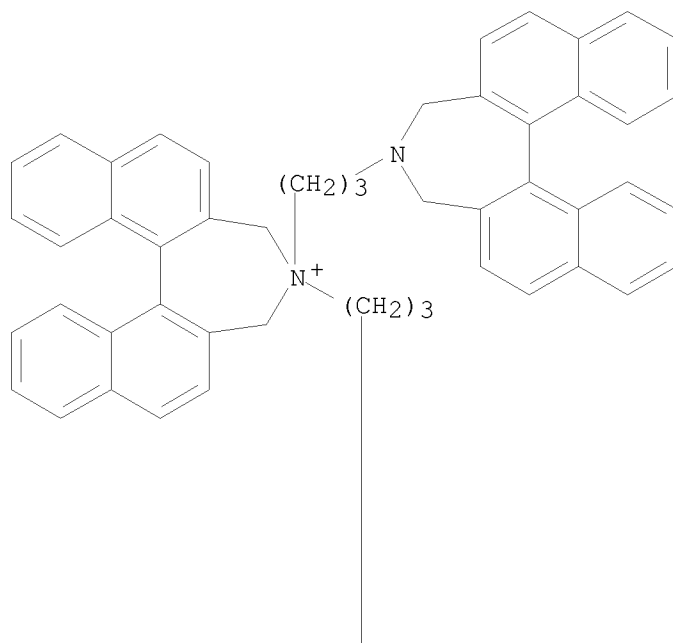




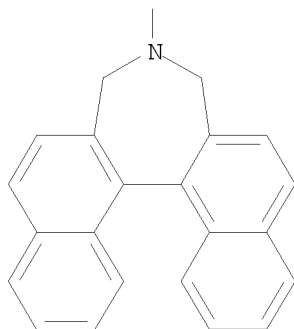
10/587,467

L11 ANSWER 169 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 793667-64-8 REGISTRY  
ED Entered STN: 07 Dec 2004  
CN 3H-Dinaphth[2,1-c:1',2'-e]azepinium,  
4,4-bis[3-[(11bS)-3,5-dihydro-4H-dinaphth[2,1-c:1',2'-e]azepin-4-yl]propyl]-4,5-dihydro-, (11bS)- (9CI) (CA INDEX NAME)  
MF C72 H60 N3  
CI COM  
SR CA

PAGE 1-A



PAGE 2-A



10/587,467

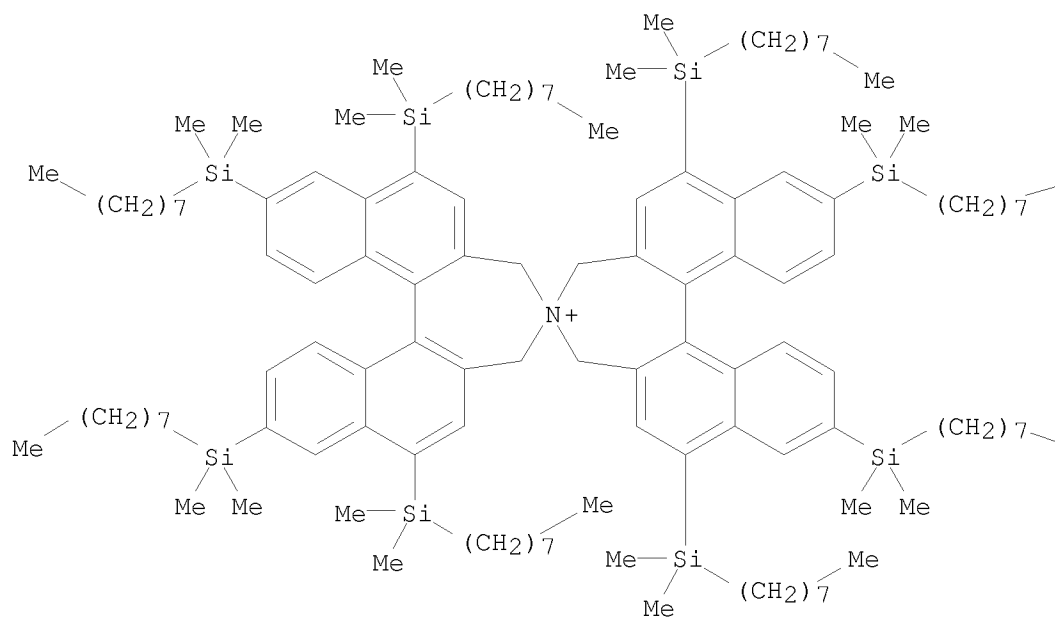
10/587,467

=> d 111 160-164

10/587,467

L11 ANSWER 160 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 834154-67-5 REGISTRY  
ED Entered STN: 18 Feb 2005  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
1,1',7,7',9,9',14,14'-octakis(dimethyloctylsilyl)-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C124 H208 N Si8  
CI COM  
SR CA

PAGE 1-A



10/587,467

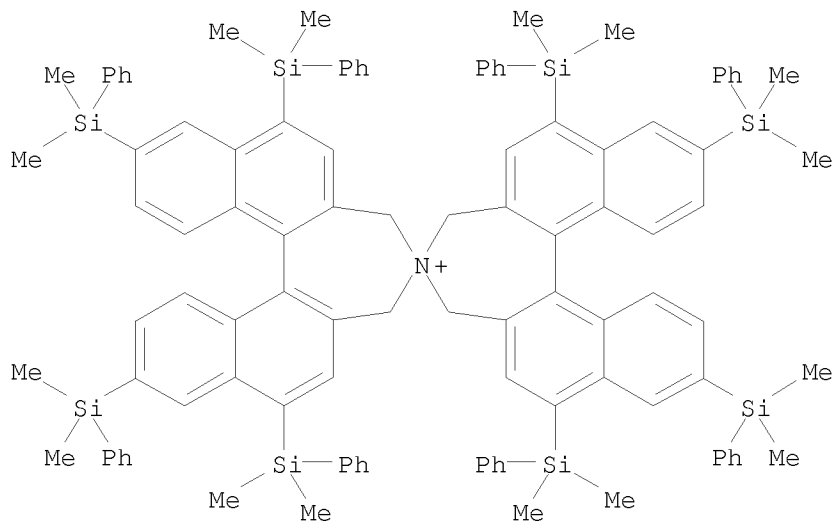
PAGE 1-B

— Me

— Me

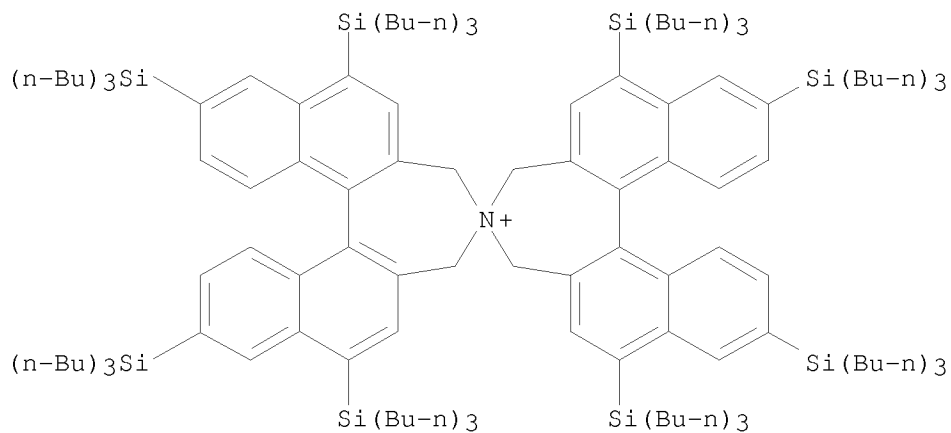
10/587,467

L11 ANSWER 161 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 834154-66-4 REGISTRY  
ED Entered STN: 18 Feb 2005  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
1,1',7,7',9,9',14,14'-octakis(dimethylphenylsilyl)-3,3',5,5'-tetrahydro-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C108 H112 N Si8  
CI COM  
SR CA



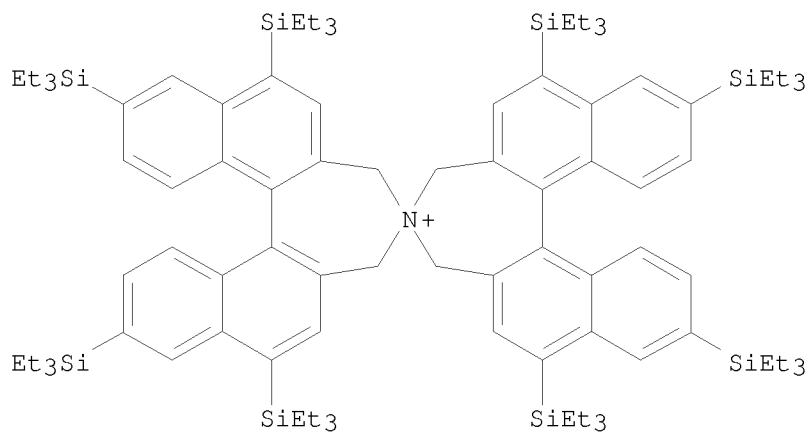
10/587,467

L11 ANSWER 162 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 834154-65-3 REGISTRY  
ED Entered STN: 18 Feb 2005  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octakis(tributylsilyl)-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C140 H240 N Si8  
CI COM  
SR CA



10/587,467

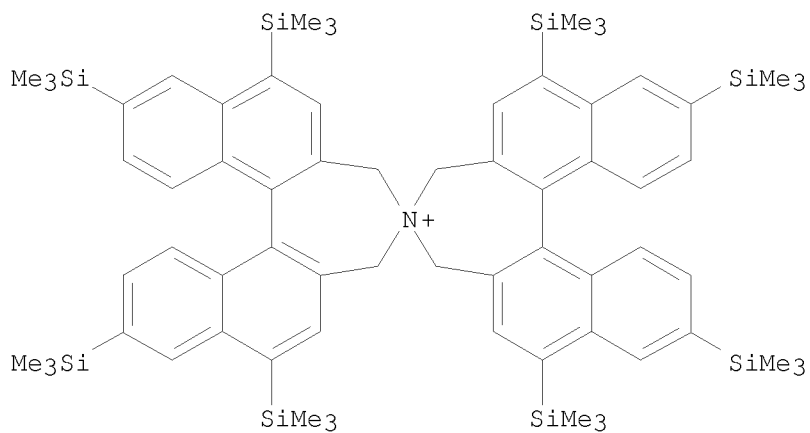
L11 ANSWER 163 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 834154-64-2 REGISTRY  
ED Entered STN: 18 Feb 2005  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octakis(triethylsilyl)-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C92 H144 N Si8  
CI COM  
SR CA





10/587,467

L11 ANSWER 164 OF 260 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 834154-63-1 REGISTRY  
ED Entered STN: 18 Feb 2005  
CN 4,4'-Spirobi[4H-dinaphth[2,1-c:1',2'-e]azepinium],  
3,3',5,5'-tetrahydro-1,1',7,7',9,9',14,14'-octakis(trimethylsilyl)-,  
(11bR,11'bR)- (9CI) (CA INDEX NAME)  
MF C68 H96 N Si8  
CI COM  
SR CA



10/587,467

=>